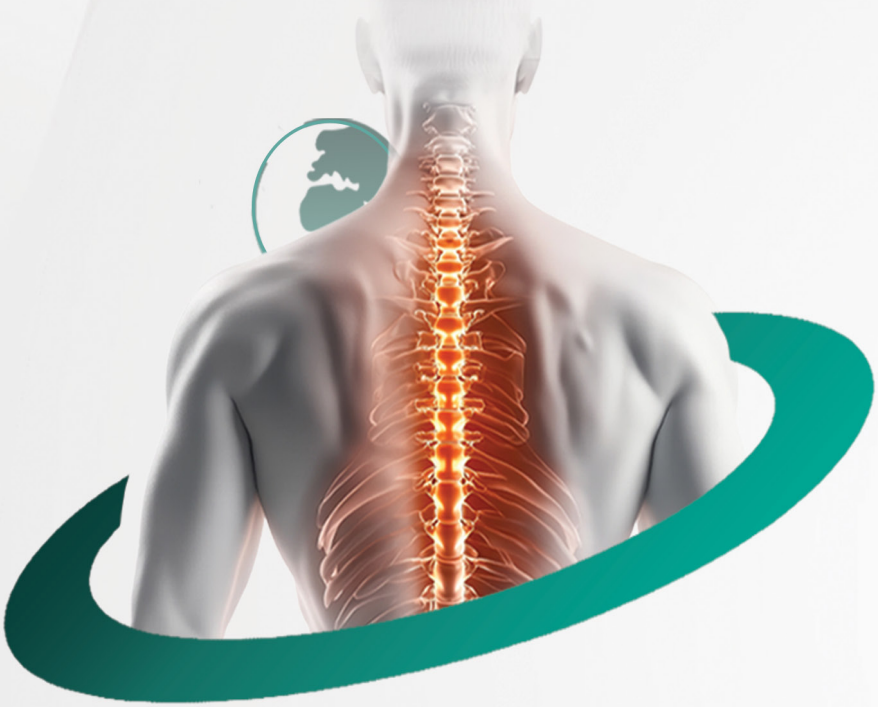
هُوَ البَصیر

25th

The 2nd International and
25th National Seminar in
Specific Spinal Physical Therapy

دومین سمینار بین المللی
و بیست و پنجمین سمینار ملی
فیزیوتراپی تخصصی
ستون فقرات



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دومین سمینار بین‌المللی
و بیست و پنجمین سمینار ملی فیزیوتراپی تخصصی ستون فقرات

به کوشش: محمدرضا آشتیانی

امور اجرایی و بازرگانی: حمید رضا اسکندری

صفحه آرایی و امور هنری: فاطمه قیاسوند – حامد خلیلی

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پست الکترونیکی: Rasane_takhassosi@yahoo.com وب سایت: Rasanetakhassosi.ir

انتشارات رسانه تخصصی

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پیام رئیس سمینار

دکتر نورالدین کریمی

با نام و یاد آرام‌بخش دل‌ها

بیست و پنجمین سمینار فیزیوتراپی تخصصی ستون فقرات در پاسخ به استقبال جامعه فیزیوتراپی و در راستای اعتلای سطح علمی همکاران و بهبود کیفی خدمات سلامت، توسط مسئول برگزاری ثابت آن در قالب بین‌المللی برنامه‌ریزی شده است. این سمینار بیش از پیش زمینه‌ساز حضور اساتید این رشته از کشورهای مختلف و بهره‌مندی مخاطبان در سطح بین‌المللی خواهد بود؛ بدین منظور از صاحب‌نظران کشورهای مختلف مرتبط با حوزه سلامت ستون فقرات جهت تبادل نظر، انتقال تجربیات و آموزش آخرین رویکردهای پیشگیری، ارزیابی و درمان فیزیوتراپی دعوت شده است. اجرای سمینار به گونه‌ای است که علاوه بر مخاطبان در ایران، به‌صورت همزمان برای شرکت‌کنندگان کشورهای دیگر از جمله پاکستان و عمان برگزار می‌شود.

برگزاری یک برنامه علمی به این صورت ناشی از اعتقادی است که علم را جهانی، آموزش آن را بدون مرز و حرکت در این مسیر را یک ضرورت می‌داند. به‌ویژه اینکه در عصر حاضر پیمایش این مسیر بسیار تسهیل شده است. شکل‌گیری چنین پدیده‌هایی موجب تشویق جوانان به همگرایی، هم‌افزایی، بالندگی علمی و در نهایت ارتقای سطح کیفیت

زندگی انسان‌ها خواهد شد؛ هرچند آموزش تکنیک‌های عملی هنوز با حضور فراگیران و در تعداد محدود صورت می‌گیرد، اما مباحث تئوریک رشته فیزیوتراپی می‌تواند در قالب مجازی و با شرکت‌کنندگان انبوه برگزار شود. نحوه برگزاری دومین سمینار بین‌المللی و بیست و پنجمین سمینار ملی فیزیوتراپی تخصصی ستون فقرات در نوع خود برای جامعه فیزیوتراپی ایران آغاز راهی تازه است.

این سمینار در استمرار خود بستری برای معرفی و ترویج روش‌ها، برنامه‌ها و رویکردهای متعددی در حوزه‌های پیشگیری، ارزیابی و درمان فیزیوتراپی نظیر موارد ذیل خواهد بود.

Stabilization Exercise،Mobilization, Manipulation, Craniosacral Therapy, Myofascial Release, Dry Needling، Postural Restoration ،Movement System Impairment Syndromes, Back School, Strain Counterstrain, Positional Release, Muscle Energy Technique, Electrotherapy Modalities, Tele-Physiotherapy, Virtual Reality(VR)

رشته فیزیوتراپی از رویکرد راه‌اندازی یک فرد دچار قطع عضو یا مبتلا به فلج اطفال تا درمان اختلالات حرکتی، تکاملی پویا و مبتنی بر شواهد پیدا کرده است. این رشته به موازات رشد علمی، در مقاطع آموزشی خود نیز شاهد توسعه قابل توجهی بوده است؛ از مقطع تکنسین تا دکتری تخصصی. چشم‌انداز متعالی این رشته پذیرش گسترده دکتری حرفه‌ای فیزیوتراپی از مقطع دیپلم و استمرار دوره تحصیلات تکمیلی در قالب دکتری تخصصی فیزیوتراپی خواهد بود.

پیام دبیر علمی

دکتر ناهید رحمانی

به نام خدا

اساتید، پژوهشگران، دانشجویان و همکاران گرامی
با سلام و احترام
خرسندیم که افتخار برگزاری یکی دیگر از بزرگترین و پرافتخارترین رویدادهای علمی در حوزه فیزیوتراپی را با عنوان «دومین سمینار بین المللی و بیست و پنجمین سمینار ملی فیزیوتراپی تخصصی ستون فقرات» با حضور متخصصان، پژوهشگران و دانشجویان برجسته داخل و خارج از کشور را داریم. این سمینار با هدف ارتقاء سطح علمی و عملی فعالان حوزه فیزیوتراپی، فرصتی ناب برای تبادل دانش، تجربه‌ها و ایده‌های نوین و همچنین ارتقاء دانش و مهارت‌ها در اختیار فیزیوتراپیست‌های عزیز کشورمان قرار می‌دهد.
در این سمینار تخصصی سخنرانی‌ها و پانل‌های کاربردی در زمینه تشخیص افتراقی اختلالات ستون فقرات از دیدگاه جراحان و فیزیوتراپیست ها، آسیب شناسی اختلالات و درمانهای موجود چند رشته ای برای این آسیب‌ها توسط اساتید و همکاران متخصص خارج و داخل کشور برنامه ریزی گردیده است. امید است که با حضور ارزشمند شما، این سمینار بار دیگر به نقطه عطفی در هرچه به روزتر شدن دانش فیزیوتراپی در زمینه تشخیص و درمان اختلالات ستون فقرات تبدیل شود.
با احترام

پیام دبیر اجرایی

علی آشیانی

به نام خداوند قلم

با افتخار و خرسندی، دومین سمینار بین‌المللی و بیست‌وپنجمین سمینار ملی فیزیوتراپی تخصصی ستون فقرات در روزهای ۹ و ۱۰ اسفند ۱۴۰۳ (۲۷ و ۲۸ فوریه ۲۰۲۵) در دانشگاه علوم توانبخشی و سلامت اجتماعی برگزار می‌شود. این رویداد فرصتی ارزشمند برای گردهمایی متخصصان، پژوهشگران و دانشجویان این حوزه خواهد بود تا در فضایی علمی و پویا، دانش خود را به‌روز کنند و از جدیدترین یافته‌های علمی بهره‌مند شوند.

یکی از ویژگی‌های برجسته این سمینار، برگزاری همزمان و آنلاین در سه کشور ایران، پاکستان (دانشگاه علوم کاربردی و بیولوژیکال لاهور) و عمان (نیزوی عمان) در روز نخست است. این بستر بین‌المللی به ما امکان می‌دهد که مرزهای دانش را گسترش داده و تعاملات علمی سازنده‌ای را میان متخصصان از سراسر جهان رقم بزنیم. ارتباط علمی میان محققان، انتقال تجربیات و همکاری‌های فرامرزی از جمله مزایای این همایش است که به ارتقای سطح علمی و عملی فیزیوتراپیست‌ها کمک شایانی خواهد کرد.

این سمینار با هدف ارتقای دانش فیزیوتراپی در زمینه‌های مختلف مرتبط با ستون فقرات، ارزیابی‌های بالینی و عملکردی، درمان‌های نوین و فناوری‌های پیشرفته برگزار می‌شود. موضوعاتی

همچون روش‌های نوین تشخیصی، درمان‌های پیشرفته و بهره‌گیری از تکنولوژی‌های نوین از جمله محورهای اصلی این رویداد خواهند بود. متخصصان و صاحب‌نظران این حوزه تلاش خواهند کرد تا جدیدترین دستاوردهای علمی را با شرکت‌کنندگان به اشتراک بگذارند و زمینه را برای توسعه راهکارهای نوین درمانی فراهم کنند.

این سمینار، حاصل همکاری ارزشمند اساتید برجسته گروه فیزیوتراپی دانشگاه علوم توانبخشی و سلامت اجتماعی و تلاش بی‌وقفه کادر اجرایی دانشجویی است که با شور و اشتیاق مثال‌زدنی، نقش مؤثری در برنامه‌ریزی و برگزاری آن داشته‌اند؛ بدون تردید این مشارکت گسترده، نشان‌دهنده تعهد علمی و حرفه‌ای نسل جدید فیزیوتراپیست‌ها به پیشرفت این رشته است. کادر اجرایی دانشجویی، با مسئولیت‌پذیری و انگیزه بالا، سهم بزرگی در هماهنگی و اجرای این سمینار بر عهده داشته و نشان داده‌اند که نسل آینده فیزیوتراپی، آینده‌ای درخشان و پرتوان را برای این حوزه رقم خواهد زد.

در پایان، از شرکت فیزیوپیشگام که با حمایت‌های خود ما را در برگزاری این سمینار یاری کرده است، سپاسگزارم. امیدوارم این گردهمایی علمی، بستر مناسبی برای انتقال دانش، ایجاد تعاملات علمی جدید و گامی مؤثر در جهت ارتقای کیفیت خدمات فیزیوتراپی تخصصی ستون فقرات باشد. بی‌تردید، تعاملات علمی و بهره‌گیری از یافته‌های نوین علمی در این سمینار، آینده‌ای روشن‌تر را برای این حوزه رقم خواهد زد و مسیر پیشرفت را برای پژوهشگران و متخصصان این رشته هموارتر خواهد ساخت.

ارکان سمینار

دکتر نورالدین کریمی
رئیس سمینار

دکتر ناهید رحمانی
دبیر علمی

علی آشیانی
دبیر اجرایی

Syed Asadullah Arslan PT; PhD.
دبیر علمی پاکستان

فیزیوتراپیست دکتر محمد جواهریان
هماهنگ کننده سخنرانان بین المللی

Ahmed Ibrahim Al-Kharusi PT; PhD
دبیر علمی عمان

اعضای کمیته علمی

فیزیوتراپیست دکتر ایرج عبداللهی
استاد دانشگاه علوم توانبخشی و سلامت اجتماعی

فیزیوتراپیست دکتر اسماعیل ابراهیمی تکامجانی
استاد دانشگاه علوم پزشکی ایران

فیزیوتراپیست دکتر محمدعلی محسنی بندپی
استاد دانشگاه علوم توانبخشی و سلامت اجتماعی

فیزیوتراپیست دکتر خسرو خادمی کلانتری
استاد دانشگاه علوم پزشکی شهید بهشتی

فیزیوتراپیست دکتر بهروز عطارباشی مقدم
استاد دانشگاه علوم پزشکی تهران

دکتر محمد پرنیان پور
استاد دانشگاه صنعتی شریف

فیزیوتراپیست دکتر امیرمسعود عرب لودریچه
استاد دانشگاه علوم توانبخشی و سلامت اجتماعی

فیزیوتراپیست دکتر حسین نگهبان سیوکی
استاد دانشگاه علوم پزشکی مشهد

فیزیوتراپیست دکتر صدیقه کهریزی
استاد دانشگاه تربیت مدرس

فیزیوتراپیست دکتر علیرضا متأله
استاد دانشگاه علوم پزشکی شیراز

فیزیوتراپیست دکتر امیرحسین کهلایی
دانشیار دانشگاه علوم توانبخشی و سلامت اجتماعی

فیزیوتراپیست دکتر شاهین گوهرپی
دانشیار دانشگاه علوم پزشکی جندی شاپور اهواز

فیزیوتراپیست دکتر رسول باقری
دانشیار دانشگاه علوم پزشکی سمنان

فیزیوتراپیست دکتر سهیل منصور سوهانی
دانشیار دانشگاه علوم پزشکی ایران

فیزیوتراپیست دکتر خدابخش جوانشیر
دانشیار دانشگاه علوم پزشکی بابل

فیزیوتراپیست دکتر کامران عزتی
دانشیار دانشگاه علوم پزشکی گیلان

فیزیوتراپیست دکتر فرهاد آزادی
استادیار دانشگاه علوم توانبخشی و سلامت اجتماعی

فیزیوتراپیست دکتر سلمان نظری مقدم
استادیار دانشگاه علوم پزشکی مشهد

فیزیوتراپیست دکتر محمدحسن آذرسا
استادیار دانشگاه علوم توانبخشی و سلامت اجتماعی

فیزیوتراپیست دکتر رقیه محمدی
استادیار دانشگاه علوم توانبخشی و سلامت اجتماعی

فیزیوتراپیست دکتر لیلا گودرزی
استادیار دانشگاه علوم توانبخشی و سلامت اجتماعی

فیزیوتراپیست دکتر لاله آبادی مرند
استادیار دانشگاه علوم توانبخشی و سلامت اجتماعی

فیزیوتراپیست دکتر سمیه محمدی
استادیار دانشگاه علوم توانبخشی و سلامت اجتماعی

فیزیوتراپیست دکتر زهرا مصلی نژاد
استادیار دانشگاه علوم توانبخشی و سلامت اجتماعی

فیزیوتراپیست دکتر زهرا سادات رضاییان
استادیار دانشگاه علوم پزشکی اصفهان

فیزیوتراپیست دکتر آیلین طلیم خانی
استادیار دانشگاه علوم پزشکی همدان

فیزیوتراپیست دکتر محمدباقر شمسی
استادیار دانشگاه علوم پزشکی کرمانشاه

فیزیوتراپیست دکتر حسن نامور
استادیار دانشگاه علوم پزشکی زاهدان

فیزیوتراپیست دکتر فرشاد ملهمی
استادیار دانشگاه علوم پزشکی جندی شاپور اهواز

فیزیوتراپیست دکتر علی برزگر
استادیار دانشگاه علوم پزشکی یزد

فیزیوتراپیست دکتر ارسلان قربانپور
استادیار دانشگاه علوم پزشکی تهران

اعضای کمیته اجرایی

ویراستاری محمد عبدی، رضا آزیده	مسئول رسانه نرگس صفالو
گرافیست محمدرضا علینقی	مسئول آرشیو سمینار علی جاوید
خلاصه مقالات پوستر محبوب الله غلامی	امور مالی محمدحسین مازوچی
هماهنگی کارگاه ها میلاد ذوکایی	تدوین ویدیو محمد رادمنش
هماهنگی سخنرانان داخلی فیزیوتراپیست عماد عبیات	دبیر کمیته تحقیقات دانشجویی فاطمه حسین‌زاده
مجری فیزیوتراپیست مرضیه کردی	امور مدعوین و سرتیفیکیت مهدی میری
فضای مجازی فیزیوتراپیست حمید شاملوراد	مجری بخش بین الملل آریا رحیمی گل خندان
سازماندهی اطلاعات نازنین درویشی	

کمیته مشورتی دانشجویی

مهدیه اردستانی	محمدامین جعفری
علی اکوانی	آمیار حسن‌زاده
سیده آمنه انیشه	فاطمه حسینی
اشکان باغیشنی	زهرا حیدری
ملیکا برازنده	فاطمه خداوردوئی
ندا بیگدلی	امیرعباس خضرپور
آرمان تقی زاده	کوثر درخشان پور
مسعود جلالی	رسول رزمجویی

علیرضا رمضانی	یاسمن عمویی
ساسان روحانی	سینا غفوری
اسما زارعی	سما فراهانی
شایان سالاروند	شایان فرزامی
امیرحسین سهراب طهرانی	نرگس محمدی
مبینا سیفی	سجاد میر
محمد ابراهیم شاهسوند	مهسا ویسی
محمداحسان شریفی	آرش یارقلی

رابطین دانشگاه‌ها

امیرعباس خضرپور - دانشگاه علوم پزشکی مشهد
سارا خلیقی پور - دانشگاه علوم پزشکی اصفهان
غزاله خندان رو - دانشگاه علوم پزشکی زاهدان
امیرحسین رحیمی - دانشگاه علوم پزشکی شیراز
لیلا سالاریان - دانشگاه علوم پزشکی سمنان
محمد امین فروهی - دانشگاه علوم پزشکی اهواز
ریحانه غدیری - دانشگاه علوم پزشکی کرمان
امیرحیان قربانی - دانشگاه علوم پزشکی شهید بهشتی
محمدمهدی قربانی - دانشگاه علوم پزشکی تهران
مریم امیرخانی - دانشگاه علوم پزشکی همدان
امیر حسین عقابی - دانشگاه علوم پزشکی گیلان
مبینا احمدی - دانشگاه علوم پزشکی ایران
امیرحسین اشرلو - دانشگاه علوم پزشکی تبریز
مرضیه سفیدی - دانشگاه علوم پزشکی بابل

همکار اجرای سمینار

گروه علمی آموزشی فیزیوپیشگام

به مدیریت: جناب آقای سیدعلی‌محمد علینژاد

تقدیر و تشکر

از زحمات بی دریغ کلیه عزیزانی که ما را در اجرای این گردهمایی علمی یاری نموده‌اند، سپاسگزاریم و هم‌دلی و همکاری ایشان را ارج می‌نهیم.

تشکر ویژه و قدردانی ویژه مسئولین برگزاری سمینار از:

جناب آقای دکتر سید علی حسینی، رئیس محترم دانشگاه علوم توانبخشی و سلامت اجتماعی

حجت الاسلام و المسلمین حاج آقا دکتر محمد افشاری، ریاست محترم دفتر نهاد نمایندگی ولی فقیه در دانشگاه

جناب آقای دکتر محمدعلی محسنی بندپی، مدیر محترم گروه فیزیوتراپی و رئیس مرکز تحقیقات توانبخشی اختلالات عصبی-عضلانی-اسکلتی و معاون بین الملل دانشگاه (معاون امور پارلمانی، حقوقی و استان‌های وزارت تعاون، کار و رفاه اجتماعی)

جناب آقای دکتر محمد سعید خانجانی، معاون محترم تحقیقات و فناوری دانشگاه

جناب آقای دکتر مهرداد فرخی، معاون محترم توسعه مدیریت و منابع

جناب آقای دکتر حمیدرضا خرم خورشید، معاون محترم آموزش دانشگاه

جناب آقای دکتر بابک فرزین نیا، معاون محترم فرهنگی - دانشجویی

جناب آقای دکتر جواد شجاع فرد، مدیر محترم حراست دانشگاه

جناب آقای دکتر محمدرضا خدایی اردکانی ، معاون محترم درمان دانشگاه

انجمن علمی دانشجویی فیزیوتراپی

مسئولین و کادر محترم سلف دانشگاه

مسئولین و مدیران محترم روابط عمومی، مالی، درمان و توانبخشی، آموزش، فناوری اطلاعات، آموزش ضمن خدمت، حراست، امور عمومی، امور دانشجویی، بسیج جامعه پزشکی و بسیج دانشجویی

و کلیه همکاران و کارشناسان مسئول حوزه روابط عمومی به ویژه :

جناب آقای دکتر کیانوش عبدی (مدیر محترم مدیر توسعه و ارزیابی تحقیقات)

جناب آقای دکتر اکبر میرجانی اقدم (مسئول دفتر ریاست)

سرکار خانم مهندس سمیه ناظری (رئیس محترم اداره آمار و فناوری اطلاعات)

سرکار خانم ندا قنبری (مدیر روابط عمومی)

سرکار خانم فرشته مخبر (مشاور امور بانوان ریاست دانشگاه)

سرکار خانم دکتر لیلا استادهاشمی (سرپرست محترم کمیته تحقیقات و فناوری دانشجویی)

سرکار خانم دکتر فروزان شکوه (مدیر سامانه آموزش مداوم دانشگاه)

سرکار خانم مرجان رنجبر (کارشناس مسئول آموزش مداوم جامعه پزشکی و دبیر آموزش مداوم دانشگاه)

آقای رضا پیرهادی (کارشناس روابط عمومی)

جناب آقای محمد مظلومی (مسئول سمعی و بصری)

خانم مینا سلطان علیزاده (کارشناس IT)

جناب آقای قاسم نوراللهی (مدیر اجرایی دفتر هم اندیشی اساتید)

جناب آقای احمد قنبری (مسئول خدمات و پشتیبانی)

و همکاران گروه آموزشی فیزیوتراپی دانشگاه علوم توانبخشی و سلامت اجتماعی:

جناب آقای حسن باقری (مسئول دفتر) و فیزیوتراپیست نگار اخوان (کارشناس گروه)

مرضیه افخمی (مدیریت توسعه منابع)

همینطور از همفکری و همکاری صمیمانه:

کمیته تحقیقات و فناوری دانشجویی

اعضای محترم کمیته‌های علمی و اجرایی، اساتید و سخنرانان سمینار

انجمن فیزیوتراپی ایران و شعب آن در سراسر کشور

اساتید و همکاران فیزیوتراپیست سراسر کشور و به ویژه دانشگاه علوم توانبخشی و سلامت اجتماعی و سایر گروه‌ها و انجمن‌های علمی و حرفه ای صمیمانه تشکر و قدردانی می‌گردد.

25th

The 2nd International and
25th National Seminar in
Specific Spinal Physical Therapy

دومین سمینار بین المللی
و بیست و پنجمین سمینار ملی
فیزیوتراپی تخصصی
ستون فقرات

برنامه علمی روزانه
Daily Scientific Program

FIRST DAY

THURSDAY

2025/2/27

Speaker	Title	Time
Physiotherapist Dr. Syed Hafiz Ijaz Ahmed Burq Lahore General Hospital, Lahore, Pakistan	Post-Operative Rehabilitation of Spinal Cord Injury Patients in Resource-Limited Settings: A Comprehensive Review	8:00 - 8:30 IRST 9:30 - 10:00 PKT 8:30 - 9:00 GST
Physiotherapist Dr. Fahimeh Hashemirad Assistant Professor, University of Nizwa	Sensory Discrimination Training and Cortical Remapping in Low Back Pain: An Evidence-Based Perspective	8:30 - 8:45 IRST 10:00 - 10:15 PKT 9:00 - 9:15 GST
Dr. Seyyed Alireza BassamPour Orthopedic Surgeon (Fellowship-Trained in Spine Surgery)	New Methods in Surgical Interventions for Patients with Increased Thoracic Kyphosis	8:45 - 9:15 IRST 10:15 - 10:45 PKT 9:15 - 9:45 GST
Physiotherapist Dr. Soheil Sohani Associate Professor, Iran University of Medical Sciences	Introducing Laser Endoscopy of Lumbar Intervertebral Discs and Its Rehabilitation	9:15 - 9:35 IRST 10:45 - 11:05 PKT 9:45 - 10:05 GST
Prof. Dr. Muhammad Salman Bashir Dean University of management technology	The Spine Care Continuum: Connecting the Dots between Prevention, Diagnosis, and Treatment.	9:35 - 10:05 IRST 11:05 - 11:35 PKT 10:05 - 10:35 GST

Speaker	Title	Time
Dr. Mohammad Parnianpour Professor of Mechanical Engineering, Sharif University of Technology	Postural and Spinal Stability Analysis for Different Floor Sitting Styles	10:05 - 10:30 IRST 11:35 - 12:00 PKT 10:35 - 11:00 GST
Coffee Break		10:30 - 10:45 IRST 12:00 - 12:15 PKT 11:00 - 11:15 GST
Opening Ceremony		10:45 - 11:45 IRST 12:15 - 13:15 PKT
Tilawat and National Anthems		11:15 - 12:15 GST
Physiotherapist Dr. Noureddin Karimi Seminar Chairperson		
Physiotherapist Dr. Nahid Rahmani Scientific Secretary		
Dr. Seyyed Ali Hosseini Dean, University of Social Welfare and Rehabilitation Sciences		
Prof. Dr. Mohammad Ali Mohseni Bandpei Vice-Minister of Cooperative, Labor and Social Welfare of the Islamic Republic of Iran		
Dr. Ahmad Meydari The Ministry of Cooperative, Labor and Social Welfare of the Islamic Republic of Iran		
Prof. Dr. Muhammad Mansoor Ahmed Executive Director, PGC Universities		
Maj. Gen. Prof. Naeem Naqi Vice-Chancellor, Lahore University of Biological and Applied Sciences		
Dr. Mohammad Ibrahim Al-Kharoosi Assistant Professor, Nizwa University		

Speaker	Title	Time
Free Time		11:45 - 12:00 IRST
		13:15 - 13:30 PKT
		12:15 - 12:30 GST
Discussion Pannel: **Approaching to Spinal Disorders** **Prof. Dr. Ahsan Javed** Associate Dean, Faculty of Allied Health Sciences , University of South Asia, Lahore **Prof. Dr. Rabiya Noor** HOD, Riphah International University **Prof. Dr. Mohammad Ali Mohseni Bandpei** University of Social Welfare and Rehabilitation Sciences **Physiotherapist Dr. Mohammad Javaherian** University of Social Welfare and Rehabilitation Sciences		12:00 - 13:00 IRST
		13:30 - 14:30 PKT
		12:30 - 13:30 GST
Lunch Time		13:00 - 14:00 IRST
		14:30 - 15:30 PKT
		13:30 - 14:30 GST
Dr. Kashif Sultan MS Neurosurgery (UHS)	Role of Rehabilitation in Postoperative Intra Dural Extra Medullary Benign Spinal Lesions	14:00 - 14:15 IRST
		15:30 - 15:45 PKT
		14:30 - 14:45 GST
Physiotherapist Dr. Mohammad Jamali Senior Staff Physical Therapist, Wellesly College	Medical Screening for Sinister Pathology in Individuals with Antalgic Gait	14:15 - 14:30 IRST
		15:45 - 16:00 PKT
		14:45 - 15:00 GST

Speaker	Title	Time
Dr. Mohsen Shafizad Sheffield Hallam University	Relationship Between Trunk Stiffness and Risks of Fall in Older Adults	14:30 - 14:45 IRST 16:00 - 16:15 PKT 15:00 - 15:15 GST
Dr. Mohammad Ibrahim Al-Kharoosi Assistant Professor, Nizwa University	Evidence for the effectiveness of Mechanical traction in the management of mechanical low back pain	14:45 - 15:00 IRST 16:15 - 16:30 PKT 15:15 - 15:30 GST
Physiotherapist Samiyeh Rostami School of Rehabilitation and Medical Sciences University of Nizwa	A Scoping Review on Postural Dysfunction and Rehabilitation Strategies for Pelvic Floor Health.	15:00 - 15:15 IRST 16:30 - 16:45 PKT 15:30 - 15:45 GST
Physiotherapist Dr. Laleh Abadi Marand Assistant Professor, University of Social Welfare and Rehabilitation Sciences	Low Back Pain in Patients with Multiple Sclerosis	15:15 - 15:30 IRST 16:45 - 17:00 PKT 16:45 - 17:00 GST
Physiotherapist Saeid Mozayan Department of Physiotherapy, University of Tehran medical sciences , Tehran, Iran	A Comparative Assessment of Variations in the Thickness and Displacement of Abdominal Wall Muscles and the Bladder Base in Athletes,with Patients Suffering from Urinary Incontinence.	15:30 - 15:40 IRST 17:00 - 17:10 PKT 16:00 - 16:10 GST
Coffee Break		15:40 - 16:00 IRST 17:10 - 17:30 PKT 16:10 - 16:30 GST
Torsten Liem Osteopathie Schule Deutschland	Psychosomatic Ostopathy - Its clinical applications	16:00 - 16:30 IRST 17:30 - 18:00 PKT 16:30 - 17:00 GST

Speaker	Title	Time
Physiotherapist Dr. Pezhman Masoudi PhD of Physiothrapist	Comparative analysis of Heart Rate Varaibility, Suboccipital muscles sonography and cervical Range of Motion between hypertensive and normotensive groups and Comparing systolic and diastolic blood pressure changes after eye cervical re-education program and sham in hypertensive persons	16:30 - 16:40 IRST 18:00 - 18:10 PKT 17:00 - 17:10 GST
Discussion Pannel: **Electrotherapy in Spinal Disorders** **Dr. Bassir Majdoleslami** PhD of Physiotherapy **Physiotherapist Dr. Mohammad Hassan Azarsa** Assistant Professor, University of Social Welfare and Rehabilitation Sciences **Physiotherapist Dr. Kamran Ezzati** Gilan University of Medical Sciences **Physiotherapist Shaghayegh Fouladvandi** **Dr. Hamidreza Goodarzi** Assistant Professor, University of Social Welfare and Rehabilitation Sciences		16:40 - 17:30 IRST 18:10 - 19:00 PKT 17:10 - 18:00 GST
Physiotherapist Dr. Ghazal Hashemi PhD of Physiotherapy	The Role of Virtual Reality in Enhancing Rehabilitation Outcomes After Spinal Cord Injury	17:30 - 17:40 IRST 19:00 - 19:10 PKT 18:00 - 18:10 GST
Dr. Mohammad Mahdi Soleimani MD ,Neurosurgeon , Tehran Payambaran hospital	Robotic Spinal Disc Surgery: Precision, Benefits, and Challenges	17:40 - 17:50 IRST 19:10 - 19:20 PKT 18:10 - 18:20 GST

Speaker	Title	Time
Maryam Alizadeh MD, Candidate of PhD	Lower Back Pain with Constipation: Relation, Causes and Treatment	17:50 - 18:00 IRST 19:20 - 19:30 PKT 18:20 - 18:30 GST
Physiotherapist Nastaran Bahadorani MSc, Tehran University of Medical Sciences	The contribution of exoskeleton to the spinal health	18:00 - 18:10 IRST 19:30 - 19:40 PKT 18:30 - 18:40 GST
Physiotherapist Dr. Noureddin Karimi University of Social Welfare and Rehabilitation Sciences	Applicability of using dynamic MRI to evaluate alleged cranial rhythmic impulse (CRI)	18:10 - 18:20 IRST 19:40 - 19:50 PKT 18:40 - 18:50 GST

SECOND DAY

FRIDAY - جمعه

2025/2/28 -۱۴۰۳/۱۲/۱۰

زمان	عنوان	سخنران
8:00 - 8:15 IRST 9:30 - 9:45 PKT 8:30 - 8:45 GST	بررسی اثر لیزر کم توان و مگنت در درمان حیوانات خانگی مبتلا به آسیب ستون فقرات	**فیزیوتراپیست مجید رجبیان- فیزیوتراپیست زینب واشقانی فراهانی** کارشناسی ارشد فیزیوتراپی
8:15 - 8:25 IRST 9:45 - 9:55 PKT 8:45 - 8:55 GST	The effect of acute Plantar Flexor Muscles Fatigue on postural control of upright stance in people with chronic low back pain	**فیزیوتراپیست دکتر مریم سعادت** عضو هیئت علمی دانشگاه علوم پزشکی جندی شاپور اهواز
8:25 - 8:35 IRST 9:55 - 10:05 PKT 8:55 - 9:05 GST	Investigating the diagnostic value of the cross-sectional area and thickness of the lumbopelvic muscles using ultrasound in differentiating lumbar disc herniation patients with unilateral radicular pain healthy subjects	**فیزیوتراپیست دکتر حسین رفسنجانی** عضو هیئت علمی دانشگاه علوم پزشکی مشهد
8:35 - 9:00 IRST 10:05 - 10:30 PKT 9:05 - 9:30 GST	Non operative treatments mistakes from a surgeons perspective in scoliosis management	**دکتر حسن قندهاری** عضو هیئت علمی دانشگاه علوم پزشکی ایران
9:00 - 10:00 IRST 10:30 - 11:30 PKT 9:30 - 10:30 GST	**پنل آزاد** **فیزیوتراپیست دکتر محسن هاشمی** دکترای حرفه ای فیزیوتراپی فیزیوتراپیست کلودت بابایی میرشکارلو، فیزیوتراپیست احسان بحیرایی، فیزیوتراپیست عبدالله حمزه ئی، فیزیوتراپیست همایون ستوده، فیزیوتراپیست کیوان کاکابرائی، فیزیوتراپیست انوشیروان محمدی	

زمان	عنوان	سخنران
10:00 - 10:20 IRST 11:30 - 11:50 PKT 10:30 - 10:50 GST	Which kind of imaging is helpful in diagnosing nonspecific low back pain?	**فیزیوتراپیست دکتر شاهین گوهرپی** عضو هیئت علمی دانشگاه علوم پزشکی جندی شاپور اهواز
10:20 - 10:30 IRST 11:50 - 12:00 PKT 10:50 - 11:00 GST	Evaluation of the effects of lumbopelvic manipulation on the central nervous system plasticity in non-specific chronic low back pain patients by magnetic resonance spectroscopy technique	**فیزیوتراپیست دکتر داریوش دیده‌دار** عضو هیئت علمی دانشگاه بهبهان
10:30 - 11:00 IRST 12:00 - 12:30 PKT 11:00 - 11:30 GST	**استراحت**	
11:00 - 12:30 IRST 12:30 - 14:00 PKT 11:30 - 13:00 GST	**موضوع پنل :** **انحرافات ستون فقرات** **فیزیوتراپیست دکتر بصیر مجدالاسلامی** دکترای تخصصی فیزیوتراپی **دکتر محمد رازی** عضو هیئت علمی دانشگاه علوم پزشکی ایران **دکتر اشکان حیدری** **دکتر فرشاد شالچی** عضو هیئت علمی دانشگاه علوم پزشکی ایران **دکتر محسن موحدی یگانه** فوق تخصص جراحی پا و مچ پا **دکتر محمد جعفری** متخصص جراحی ستون فقرات	

زمان	عنوان	سخنران
12:30 - 13:10 IRST 14:00 - 14:40 PKT 13:00 - 13:40 GST	**موضوع پنل:** **آسیب‌های ورزشی ستون فقرات: بررسی ابعاد جسمانی و روانشناختی**	**فیزیوتراپیست دکتر ناهید رحمانی** عضو هیئت علمی دانشگاه علوم توانبخشی و سلامت اجتماعی **دکتر علی مظاهری نژاد** **فیزیوتراپیست دکتر پیمانه شیرین بیان** عضو هیات علمی مرکز تحقیقات توانبخشی اعصاب اطفال **فیزیوتراپیست افشین جنابی** دکترای حرفه ای فیزیوتراپی
13:10 - 14:10 IRST 14:40 - 15:40 PKT 13:40 - 14:40 GST	**نهار و استراحت**	
14:10 - 15:00 IRST 15:40 - 16:30 PKT 14:40 - 15:30 GST	**موضوع پنل:** **فیزیوتراپی و حرکات اصلاحی**	**فیزیوتراپیست دکتر عارف سعیدی** عضو شاخه حرکات اصلاحی انجمن فیزیوتراپی ایران **فیزیوتراپیست جواد حدادی** عضو شاخه حرکات اصلاحی انجمن فیزیوتراپی ایران **فیزیوتراپیست دکتر وحید مظلوم** عضو شاخه حرکات اصلاحی انجمن فیزیوتراپی ایران **فیزیوتراپیست دکتر زهرا ریحانی‌نژاد** عضو شاخه حرکات اصلاحی انجمن فیزیوتراپی ایران **فیزیوتراپیست دکتر سمیه محمدی** عضو هیئت علمی دانشگاه علوم توانبخشی و سلامت اجتماعی **فیزیوتراپیست دکتر طاهره رضاییان** عضو هیئت علمی دانشگاه علوم پزشکی کرمان

زمان	عنوان	سخنران
15:00 - 15:10 IRST 16:30 - 16:40 PKT 15:30 - 15:40 GST	Correlation between low back pain and pelvic floor disfunction	فیزیوتراپیست دکتر سمیه محمدی
15:10 - 15:20 IRST 16:40 - 16:50 PKT 15:40 - 15:50 GST	Knee joint repositioning error in different trunk positions among females with chronic nonspecific low back pain: A cross-sectional study	فیزیوتراپیست دکتر طاهره رضاییان
15:20 - 15:40 IRST 16:50 - 17:10 PKT 15:50 - 16:10 GST	استراحت	
15:40 - 16:30 IRST 17:10 - 18:00 PKT 16:10 - 17:00 GST	**موضوع پنل :** **نقص‌های پاسچرال ستون فقرات اطفال و روش‌های درمان آن ها** **فیزیوتراپیست ام البنین علیرضایی** عضو شاخه اطفال انجمن فیزیوتراپی ایران **دکتر محمد حسین نبیان** عضو هیئت علمی دانشگاه علوم پزشکی تهران **فیزیوتراپیست مهدیه اسدی** عضو شاخه اطفال انجمن فیزیوتراپی ایران **فیزیوتراپیست ملیحه حاتمی‌نیا** عضو شاخه اطفال انجمن فیزیوتراپی ایران	

زمان	عنوان	سخنران
16:30 - 17:30 IRST 18:00 - 19:00 PKT 17:00 - 18:00 GST	**موضوع پنل :** **فیزیوتراپی استاندارد فتق دیسک کمری بر اساس گایدلاین‌های بالینی مبتنی بر شواهد** **فیزیوتراپیست دکتر حسین نگهبان سیوکی** عضو هیئت علمی دانشگاه علوم پزشکی مشهد **فیزیوتراپیست دکتر محمد جواهریان** عضو هیئت علمی دانشگاه علوم توانبخشی و سلامت اجتماع **فیزیوتراپیست دکتر ارسلان قربانپور** استادیار فیزیوتراپی دانشگاه علوم پزشکی تهران **فیزیوتراپیست دکتر فرشاد ملهمی** عضو هیئت علمی دانشگاه علوم پزشکی جندی شاپور اهواز	
17:30 - 17:40 IRST 19:00 - 19:10 PKT 18:00 - 18:10 GST	The effect of diaphragmatic breathing exercise with biofeedback on respiratory function in incomplete cervical spinal cord injury: A randomized-controlled study	**فیزیوتراپیست دکتر زهرا مصلی نژاد** عضو هیئت علمی دانشگاه علوم توانبخشی و سلامت اجتماعی
17:40 - 17:50 IRST 19:10 - 19:20 PKT 18:10 - 18:20 GST	Cervicogenic tinnitus & dizziness	**فیزیوتراپیست کیارش نمیرانیان**
17:50 - 18:00 IRST 19:20 - 19:30 PKT 18:20 - 18:30 GST	Effects of Psoas Major strain-counterstrain technique in mechanical chronic low back pain	**فیزیوتراپیست جواد حسن زاده** بخش فیزیوتراپی ارتوپدی، مؤسسه علوم سلامت، دانشگاه مارمارا، استانبول، ترکیه

سخنران	عنوان	زمان
فیزیوتراپیست دکتر فاطمه قاسمی دهچشمه عضو هیئت علمی دانشگاه علوم پزشکی شهرکرد	Differences in symmetry of pelvic and lower limbs joint kinematics between subjects with and without low back pain duting gait motion	18:00 - 18:10 IRST 19:30 - 19:40 PKT 18:30 - 18:40 GST
فیزیوتراپیست دکتر سوده زندی دکترای تخصصی فیزیوتراپی	Reliability of Elastography Measures in Individuals with and without Neck and Low Back Pain	18:10 - 18:20 IRST 19:40 - 19:50 PKT 18:40 - 18:50 GST
فیزیوتراپیست دکتر احمد بهرامیان پرچکوهی دکترای تخصصی فیزیوتراپی	Three-dimensional motion analysis of sacroiliac joint mobility: a reliability study	18:20 - 18:30 IRST 19:50 - 20:00 PKT 18:50 - 19:00 GST
فیزیوتراپیست دکتر مجید شهبازی عضو هیئت علمی دانشگاه علوم پزشکی مشهد	The Necessity of Clinical Laboratories in Physical Therapy: A New Perspective on Addressing social and Professional Needs	18:30 - 18:40 IRST 20:00 - 20:10 PKT 19:00 - 19:10 GST

25th

The 2nd International and
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دومین سمینار بین المللی
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خلاصه مقالات سخنرانی – پنل
Oral Presentations

Sensory Discrimination Training and Cortical Remapping in Low Back Pain: An Evidence-Based Perspective

Fahimeh Hashemirad

Chronic low back pain (CLBP) is commonly associated with altered cortical representations of the lumbar spine area, contributing to sensory deficits, proprioceptive impairments, and increased pain perception. Sensory discrimination training (SDT) has emerged as a novel therapeutic approach to restore the impaired neuroplastic changes in the brain through improving somatosensory acuity and enabling the remapping of the cortex.

Research indicates that somatosensory cortical maps are altered in patients with chronic pain, which results in disrupted body schema and impaired tactile acuity. SDT like two-point discrimination (TPD) training encourages the brain to recalibrate its sensory maps. Clinical trials have demonstrated that TPD training through systematic exposure to tactile stimuli with more complex spatial distinctions, not only improves tactile acuity in patients with CLBP but also reduces pain intensity, enhances proprioception, and promotes functional recovery. Improved motor control, increased sensory feedback, and decreased central sensitization are the mechanisms behind SDT's effectiveness. These findings align with broader rehabilitation strategies aimed at recalibrating the sensory-motor system and mitigating chronic pain. Even though the evidence is encouraging, more study is required to improve training methods, ascertain long-term impacts, and investigate how sensory discrimination training might be combined with other therapeutic approaches.

In conclusion, SDT targets the neuroplastic alterations that cause chronic pain and is an effective approach in the multimodal treatment of CLBP. This method has the potential to improve clinical outcomes and the quality of life for those with low back pain by restoring tactile acuity and encouraging brain remapping.

Key words: Chronic low back pain; Cortical remapping; Sensory discrimination training; Two-point discrimination.

Postural and spinal stability analysis for different floor sitting styles

Mohammad Parnianpour, Ph.D.
Department of Mechanical Engineering, Sharif University of Technology, Azadi St., Tehran, Iran

Abstract

In contrast to Western countries, traditional floor-seating cultures are prevalent in Korea, Japan, he Middle East, and Africa, where sitting on the floor in static positions such as squatting, kneeling, or sitting cross-legged is common. Most studies on sitting posture have predominantly focused on chair sitting in Western cultures, resulting in a cultural bias. This study aimed to investigate the effects of different cushion types (floor and traditional cushions of 3-cm, 5-cm, and 8-cm thickness) and seating postures (cross-legged, mother's leg, and kneeling) on measures of postural stability, trunk muscle activity, rotational spinal stability, and subjective postural stability in an Asian population. Forty right-hand and right-foot-dominant volunteers who did not experience activity-limiting back pain in the past 12 months were recruited. Multivariate analyses of variance (MANOVA) and ANOVA with a repeated-measures design were employed to assess the within-subject effects of the cushion type and seating posture. An alpha value of 0.05 was set for statistical significance. The results of this study suggest that preventing lordosis posture, seating on the floor, and maintaining a kneeling posture may reduce the loss of balance and trunk muscle fatigue. These results emphasize the need for additional ergonomic studies that focus on the seating traditions of Asian cultures.

The association between low back pain and lifestyle factors in adolescents

Fatemeh Binaei[1], Nahid Rahmani[2], Mohammad Ali Mohseni Bandpei[3]
1. Neuromusculoskeletal Rehabilitation Research Center, University of Social Welfare and Rehabilitation Sciences, Tehran, Iran.
2. Assistant Professor, Ph.D., PT. Pediatric neurorehabilitation research center, Physiotherapy department, university of social welfare and rehabilitation sciences, Tehran, Iran.
3. Professor, Ph.D., PT. Neuromusculoskeletal Rehabilitation Research Center, University of Social Welfare and Rehabilitation Sciences, Tehran, Iran

ABSTRACT

Background and aims: Low back pain (LBP) is one of the most prevalent disorders associated with spinal dysfunction and may significantly influence the quality of life in adolescents. The present study aimed to investigate the correlation between LBP and factors related to lifestyle in adolescents.

Methods: Eighty children with a history of LBP and 160 healthy matched children participated. Demographic information, pain intensity, level of disability, and lifestyle factors questionnaires were assessed. The size of the abdominal muscles was measured using a sonography device.

Results: A significant correlation was found among gender, physical activities, duration of physical activity, and doing homework. A significant correlation was also observed between the two groups and the position of doing homework. There was a significant correlation between the size of the Transverse Abdominis muscle (TrA) and duration of physical activities in healthy subjects, as well as duration of doing homework in the patient group. A significant correlation was found between the size of the Internal Oblique muscle (IO) and duration of physical activities in healthy subjects, as well as duration of doing homework in both healthy and patient groups. Finally, a significant correlation was demonstrated between the size of the External Oblique muscle (EO) and duration of physical activities in healthy subjects, as well as duration of working with computer and doing homework in the patient group.

Conclusion: physical activity and bad posture for doing homework and watching TV were considered to be as the most important risk factors for occurring LBP in adolescents.

Keywords: lifestyle, adolescent, low back pain, physical activity, sonography

The Role of Soft Tissue Management in Spinal Physiotherapy: An Orthopedic Manual Therapy Perspective

Mohammad Javaherian[1], Nahid Rahmani[2], Mohammad Ali Mohseni Bandpei[3]
1. Research Assistant Professor, Neuromusculoskeletal Rehabilitation Research Center, University of Social Welfare and Rehabilitation Sciences, Tehran, Iran.
2. Assistant Professor, Ph.D., PT. Pediatric neurorehabilitation research center, Physiotherapy department, university of social welfare and rehabilitation sciences, Tehran, Iran.
3. Professor, Ph.D., PT. Neuromusculoskeletal Rehabilitation Research Center, University of Social Welfare and Rehabilitation Sciences, Tehran, Iran

Abstract:

Soft tissues-including muscles, fascia, ligaments, and tendons-play a pivotal role in both the development and resolution of spinal disorders. When these tissues become tight, inflamed, or imbalanced, they can contribute to pain, restricted mobility, and altered biomechanics. This presentation offers an overview of the foundational principles of soft tissue manual therapy within spinal physiotherapy, highlighting evidence-based interventions that improve functional outcomes and reduce pain.

Key topics include the pathophysiology of soft tissue dysfunction in common spinal conditions, as well as the mechanisms by which manual techniques-such as myofascial release, trigger point therapy, and deep tissue mobilization-can alleviate tension and improve soft tissue health. Emphasis will be placed on clinical reasoning to determine appropriate hands-on strategies, the importance of patient-centered assessment, and the integration of exercise therapy to reinforce post-treatment gains. Attendees will learn how targeted manual techniques enhance local circulation, restore normal muscle length-tension relationships, and facilitate spinal stabilization, ultimately contributing to better patient outcomes. By weaving together current research and practical applications, this session aims to equip clinicians with a comprehensive understanding of the role soft tissue manual therapy plays in managing spinal disorders effectively.

Keywords: Soft tissue, manual therapy, low back pain, neck pain

Relationship between trunk stiffness and risks of fall in older adults

Dr Mohsen Shafizadeh
Sheffield Hallam University, UK

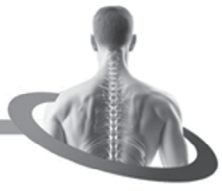
The relationship between trunk stiffness and the risk of falls in older adults is a critical area of study, highlighting the interplay between ageing, mobility, and postural control. As individuals age, they experience changes in various body systems, including cognitive impairments, decreased walking performance, and loss of postural stability, all contributing to an increased risk of falls. Studies estimated that approximately 29% of people over 65 in the United States and 30% in the United Kingdom experience falls, emphasising the importance of understanding and mitigating these risks.

Mobility assessments aim to monitor independence and frailty, measure the adaptive capacity of the neuromusculoskeletal system in diverse environments, evaluate improvements after interventions, and predict fall risks through clinically significant metrics. Indicators of ageing, such as trunk mobility and gait performance, are closely linked to functional declines and increased frailty. However, falls are multifactorial, influenced by a combination of neuromechanical, cognitive, and physical factors.

Trunk control plays a pivotal role in maintaining postural stability. Muscle stiffness and spine rigidity can adversely affect postural control, leading to higher fall risks. Research shows that younger adults exhibit low trunk rigidity and flexible gait patterns, adjusting stride length through coordinated movements of the lower limbs, pelvis, and trunk. In contrast, older adults display high trunk rigidity, modifying stride length primarily through lower limb movements without corresponding changes in pelvic and trunk motion, reflecting a more rigid gait pattern.

Posture stiffness significantly impacts fall risks. Older adults, particularly those with a fear of falling (FoF), exhibit less smooth trunk motions and greater trunk acceleration amplitude in dual-task conditions compared to those without FoF. This underscores the clinical importance of examining the association between FoF and trunk mobility control. Individuals with FoF demonstrate less smooth trunk motions at both usual and fast walking speeds. Assessing fall risk factors in representative designs that mimic real-life contexts and functional tasks under various conditions is crucial. Falls prevention programs should focus on movement adaptation in dynamic and challenging environments to help individuals recalibrate their postural responses to contextual demands. One model is Environmental

Constrained Physical Activity (ECPA) which integrates health-related fitness components (muscular strength, endurance, aerobic capacity), motor fitness components (agility, speed, reaction, coordination, balance), and cognitive functions (decision-making, dual-tasking, problem-solving, perception of visual and haptic information) to simulate activities of daily living (ADLs). This model emphasises stimulating and challenging exercise environments that accommodate the diverse balance needs of older adults. These activities can be conducted indoors or outdoors, involving problem-solving and guided discovery.
The approach is based on perturbations in the postural system to enhance fall prevention and dynamic balance. It encourages participants to explore multiple movement solutions without explicit instructions, fostering an environment rich in information. In this method, practitioners act as designers, while participants are problem-solvers, facing multidimensional and multidirectional task challenges that engage various movement axes.
In conclusion, understanding the relationship between trunk stiffness and fall risks in older adults is essential for developing effective prevention strategies.



Evidence for the effectiveness of Mechanical traction in the management of mechanical low back pain.

Mohammad Ibrahim Alkharoosi
Assistant Professor, Rehabilitation and Allied Medical Sciences College of Health Sciences

A common and incapacitating ailment, low back pain impacts millions of people globally. Numerous studies have been conducted to determine the underlying reasons for low back pain because there are numerous possible causes for the ailment (Valdivia ,2009 & Wieczorek et al 2021). Mechanical traction is one suggested therapy method for low back pain, which attempts to reduce spinal pressure and encourage spinal decompression. Much research has examined the effectiveness of mechanical traction in treating low back pain in recent years. Wegner et al, 2013 reported that show that traction has little to no effect on persons with LBP's pain level, functional status, overall improvement, and return to work, either by alone or in conjunction with other therapies. Middelkoop et al., 2010 looked at the efficacy of traction and other physical and rehabilitation therapies for persistent, non-specific low back pain. Although the authors pointed out that the overall caliber of the available studies was low, they concluded that there is little evidence to support the use of traction as a stand-alone treatment for chronic low back pain. Delitto et al 2012 suggested that although there is conflicting data about the effectiveness of traction, there is some evidence to support its usage in combination with other forms of treatment, like exercise therapy. Many studies have been reported but still the effectiveness of mechanical traction remain inconsistent.

A Scoping Review on Postural Dysfunction and Rehabilitation Strategies for Pelvic Floor Health.

Samiyeh Rostami
School of Rehabilitation and Medical Sciences University of Nizwa, PhD candidate of UKM National, University of Malaysia

The pelvic floor dysfunction (PFD) has been associated with multiple factors. There has been a growing emphasize on possibility that PFD is more than an isolated condition and its relation with other body structures has been investigated. This review explores the relationship between postural abnormality particularly thoracic and cervical regions, and PFD, considering myofascial connectivity. Myofascial connectivity has been studied for years and increasingly recognized for its connection with body structures and functions. Research indicates pelvic floor (PF) is commonly associated with postural function and stability through myofascial connectivity, linking the diaphragm, abdominal muscle, lumbar, thoracic, cervical spine as well as lower limbs. Postural changes are observed more often in women with PFDs. Since muscles do not function in isolation, body movement is best understood holistically. Studies indicates that PF is a part of the deep front line (DFL) myofascial chain, which explain why some of the postural changes in the spine, shoulder, pelvis and lower limbs are commonly associated with PFDs.

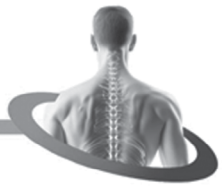
Electromyography-based study suggest that the activity of PFM is influenced by body position. Additionally, there is a synergistic relationship between abdominal muscles and PF, activating the abdominal muscle increases the activation of PFM. This would support the potential link between thoracic, cervical posture and PF.

Myofascial connectivity enables PF to participate in core stability, and PFD can result in postural misalignment in different body areas such as reduced lumbar lordosis, thoracic kyphosis, and protruded shoulders.

While traditional PFM training focuses on pelvic floor muscles, research suggests that targeting postural alignment and facial connectivity may offer a more comprehensive approach to PFD management.

In conclusion, myofascial connectivity and posture play crucial roles in PFD. Addressing these factors in PFD management may increase both treatment effectiveness and long-term outcomes. Further research is needed to explore the benefit of myofascial-based exercise intervention, integrating fascial release and postural training beyond the lumbo-pelvic area including thoracic and cervical spine. Comparing this approach to traditional PFM training may provide deeper insights into improving PFD symptoms and postural alignment.

Key words: Pelvic floor dysfunction, Myofascial connectivity, Postural dysfunction.



Low back pain in patients with multiple sclerosis

Laleh Abadi Marand
PT PhD. Professor assistant, Physiotherapy department, University of social welfare and rehabilitation sciences.

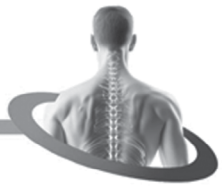
Abstract

Chronic low back pain (CLBP) is defined as continuous pain in the low back region that persists for more than 12 weeks without significant improvement in the intensity of pain. CLBP is a leading cause of activity limitations and work absence, leading to a major cost burden for the society. The causes of CLBP are multidimensional and complex. LBP is generally due to spinal instability. Then, pain induces adaptative but altered muscle activation patterns, altered lumbosacral proprioceptive acuity, and restricted range of motion, which increase the risk of chronic or recurrent LBP. These modifications in the neuromuscular activity and biomechanics of the spine affect an individual's postural stability and gait. For example, CLBP alone can induce a forward trunk inclination, which alters the kinetic and kinematic characteristics of an individual's gait and gait initiation pattern. During a dynamic task or gait, CLBP patients reduce their trunk velocity and range of motion to decrease the forces applied on the lower back. These changes in posture decrease an individual's adaptability during movement, leading to freezing-like behavior. In addition, during a dynamic challenging task, CLBP patients do not adapt their base of support. These changes in adaptative strategies increase an individual's risk of physical deconditioning.

Multiple sclerosis (MS) is a chronic inflammatory disease of the central nervous system that induces motor and sensory deficits, visual impairments and gait and postural balance disorders. Pain is a common symptom in patients with MS, considering 29 to 86% of MS patients report pain as one of the most distressing symptoms. Even though neuropathic pain is the most commonly reported type of pain in individuals with MS, the presence of the MS disease predisposes patients to develop nociceptive or musculoskeletal pain, especially back pain, which are less often reported. The prevalence of back pain and its predisposing factors in the MS population are not well known. Nevertheless, muscle trunk weakness, somatosensory disorders, asymmetric posture and gait impairments due to MS can induce back pain. In addition to the presence of MS, the presence of LBP can exacerbate the functional

difficulties of these patients, such as postural instability and gait impairments.

Independent of the assessment of MS-specific impairments, the functional evaluation of LBP involves several clinical tests, but there is no gold standard. The use of motion capture systems allows the characterization of balance, gait and movement disorders in LBP patients, but there is limited and inconsistent evidence of kinematic/kinetic measures that can be used clinically. For example, an index based on 10 discrete variables extracted from the range of motion, but it is a complex and time-consuming assessment for clinical practice. Alternatively, in daily practice, clinical questionnaires are often used to assess the impact of LBP, but they do not reflect the real capacity of patients in daily life.



A comparative assessment of variations in the thickness and displacement of abdominal wall muscles and the bladder base in athletes, with patients suffering from urinary incontinence.

Saeid Mozayan[1], Behnoush Vassaghi-Gharamaleki[2], Masoomeh Pourpanad[3]
1. Department of Physiotherapy, University of Tehran medical sciences , Tehran, Iran
2. Department of Basic Sciences in Rehabilitation, School of Rehabilitation Sciences, Iran University-of Medical Sciences, Tehran, Iran
3. Department of Basic Sciences in Rehabilitation, School of Rehabilitation Sciences, Iran. University of Medical Sciences, Tehran, Iran

Abstract

Background Urinary incontinence (UI) is a reproductive health disorder of high prevalence in women, including athletes, that can compromise performance and well-being. The abdominal wall muscles and the bladder base are integral component of the core musculature. Dysfunction of these muscles is likely involved in the pathophysiology of UI.

Objective: This study was performed to investigate and compare the thickness and displacement by abdominal wall muscles and bladder base in athlete woman and patients with UI.

Methods: A comparative study was performed with 60 women divided into two groups of 30 high performance athlete women and 30 women with a diagnosis of urinary incontinence. It was measured using ultrasound imaging measures of the abdominal wall muscle thickness (rectus abdominis, transverse abdominis, and obliques) and bladder base displacement at quiet respiration, deep breathing, and following the valsalva maneuver.

Introduction: Urinary incontinence (UI) is often perceived as a condition affecting older or sedentary individuals; however, it is also prevalent among female athletes, who face unique challenges due to the physical demands of high-impact activities. The abdominal wall muscles (rectus abdominis, transverse abdominis, and obliques) are integral to core stability, intra-abdominal pressure regulation, and pelvic floor support. Dysfunction or weakness in these muscles may compromise bladder control and exacerbate UI symptoms.

Although many studies have focused on pelvic floor muscles (PFM), the role of the abdominal wall muscles in UI, particularly in athletes, remains underexplored. This study aims to bridge this gap by evaluating the thickness and displacement of abdominal wall muscles and bladder base in athlete women compared to those with UI.

Methodology: Study Design

A cross-sectional comparative study was performed at a sports medicine clinic and a tertiary care women's health center.

Participants: The study included 60 women aged 25-40, divided into two groups:

Athlete Group (n = 30): Competitive athletes involved in high-impact sports (e.g., gymnastics, running, or weightlifting) with no history of UI or pelvic floor dysfunction.

UI Group (n = 30): Women clinically diagnosed with UI, confirmed through the International Consultation on Incontinence Questionnaire-Short Form (ICIQ-UI-SF).

Inclusion and Exclusion Criteria: Participants with respiratory, musculoskeletal, or neurological disorders were excluded. Athletes were required to have at least three years of consistent training.

Imaging and Measurements: High-resolution ultrasound imaging was used to evaluate:

Abdominal Wall Muscle Thickness: Measured at rest (quiet breathing), during deep breathing, and during the Valsalva maneuver for the rectus abdominis, transverse abdominis, and internal/external obliques.

Bladder Base Displacement: Assessed during voluntary PFM contraction and deep breathing using a convex probe.

Statistical Analysis: Data were tested for normality using the Shapiro-Wilk test. Differences between groups and conditions were analyzed using multi-factorial ANOVA. Post hoc t-tests were conducted, with significance set at $p < 0.05$.

Results:

Abdominal Wall Muscle Thickness

Quiet Breathing:

Athlete Group: Rectus abdominis: 8.5 ± 1.2 mm; Transverse abdominis: 5.2 ± 0.8 mm

UI Group: Rectus abdominis: 6.7 ± 1.1 mm; Transverse abdominis: 3.9 ± 0.6 mm

Statistical Significance: $p < 0.01$

Deep Breathing:

Athlete Group: Rectus abdominis: 9.3 ± 1.3 mm; Transverse abdominis: 6.0 ± 0.9 mm

UI Group: Rectus abdominis: 7.1 ± 1.0 mm; Transverse abdominis: 4.3 ± 0.7 mm

Statistical Significance: $p < 0.01$

Valsalva Maneuver:

Athlete Group: Rectus abdominis: 10.2 ± 1.4 mm; Transverse abdominis: 7.1 ± 1.0 mm

UI Group: Rectus abdominis: 7.5 ± 1.2 mm; Transverse abdominis: 4.9 ± 0.8 mm

Statistical Significance: $p < 0.01$

Bladder Base Displacement
Voluntary PFM Contraction:
Athlete Group: 5.2 ± 0.6 mm
UI Group: 3.4 ± 0.7 mm
Statistical Significance: $p < 0.001$
Deep Breathing:
Athlete Group: 4.7 ± 0.5 mm
UI Group: 3.1 ± 0.6 mm
Statistical Significance: $p < 0.001$

Discussion: The results provide novel insights into the critical role of abdominal wall muscles in supporting bladder base function and maintaining continence, particularly in athlete women. Athletes demonstrated greater muscle thickness and bladder base displacement, highlighting the protective effect of core strength against UI. The transverse abdominis, in particular, exhibited significant engagement during both voluntary PFM contractions and respiratory maneuvers, suggesting its dual role in core stabilization and pelvic floor support. The reduced performance in the UI group underscores the need for targeted rehabilitation addressing both abdominal and pelvic floor muscles. High-impact activities in athletes can strain the pelvic floor, but strong abdominal wall muscles may offset this risk by stabilizing intraabdominal pressure and reducing load on the bladder base. This interdependence calls for a more integrated approach to UI prevention and treatment, especially in women engaged in sports.

Clinical Implications: The findings advocate for incorporating abdominal wall muscle training into existing pelvic floor rehabilitation programs. Exercises such as core stabilization, transverse abdominis activation, and reathing techniques may enhance bladder base stability and mitigate UI symptoms.

Future research should explore the impact of tailored training protocols on long-term outcomes in athlete women and other high-risk populations, such as postpartum women.

Conclusion: This study highlights the essential role of abdominal wall muscles in maintaining bladder base stability and preventing urinary incontinence. Athlete women exhibited superior muscle thickness and bladder base displacement, emphasizing the protective role of core strength. Rehabilitation programs
integrating abdominal and pelvic floor muscle training hold promise for improving outcomes in women with UI, paving the way for more comprehensive, multidisciplinary interventions.

Psychosomatic Osteopathy- its clinical applications

Torsten Liem
M.Sc Ost., M.Sc. Paed. Ost., DO, DPO, GOsC

The basis of psychosomatic osteopathy is that health and illness take place on dynamically evolving, different hierarchically structured, interacting levels, with different aspects and dimensions of the human condition. The formulation of the construct of somatic dysfunction has been replaced in psychosomatic osteopathy by the model of the somato-energetic-psychic dysfunction complex, in which interacting risk factors, mechanisms of action and influences are summarised.

The lecture is based, among other things, on concepts in which converging efferent information from the outside world via the sensory organs, proprioception and from the body via interoceptive signals. Discrepancies between these feedback dynamics can generate prediction errors that signal uncertainty or potential threats. The more flexible, proactive and adapted these measures can be to the circumstances, the greater the likelihood of success For example, models of psychosomatic osteopathy according to Liem lead to individualised treatment approaches and techniques. These include palpation, the skills and co-regulation of the therapist, including the ability to enable the patient to access resources (interoception, exteroception, etc.). In this process, breathing, self-awareness, bifocal impulses, inner dialogues, dual awareness and mindfulness are linked to many functions of body systems, such as the immune system, the musculoskeletal system, the lymphatic system, as well as to neurophysiological and neurovegetative dynamics. As the patient works through and processes the effects of allostasis in a resource-rich flow state during palpation of key regions, the effects of allostasis can be released, allostasis is reduced and implicit dysfunctional body memories can be made explicit and resolved. Slowing down the therapeutic process is usually essential.

Comparative analysis of Heart Rate Varaibility, Suboccipital muscles sonography and cervical Range of Motion between hypertensive and normotensive groups and Comparing systolic and diastolic blood pressure changes after eye cervical re-education program and sham in hypertensive persons

Masoudi Pezhman PT, PhD, Karimi Noureddin PT, PhD, Abdollahi Iraj PT, PhD, Moravej Saiedeh MD, Samani, Mohammad Hosein PhD, Khosrobeigi Ali MD,PhD

Abstract

Objectives: To evaluate Heart Rate Variability, visible cross-sectional area of suboccipital muscles, and neck range of motion in hypertensive and normotensive groups.

Design and Setting: Forty participants, including 20 age-matched hypertensive and normotensive individuals, were evaluated using musculoskeletal sonography, HRV measurements, and a calibrated ROM device. The visible CSA of suboccipital muscles was assessed using B-mode sonography with the probe aligned perpendicularly to muscle fibers, taking the average of three attempts. Measurements were repeated 1 hour and 1 day later. HRV was measured over approximately 7 minutes and calculated in both time and frequency domains. ROM was measured using a calibrated electronic device. All procedures were conducted in a sitting position.

Results: The CSA of the Rectus Capitis Posterior Minor (RCPM) and Major (RCPMJ) muscles showed significant differences between the groups ($p=0.043$, $F=4.379$; $p=0.011$, $F=7.99$), while Obliquus Capitis Inferior (OCI) measurements did not show significant differences when considering BMI as a confounder. HRV metrics, including RMSSD, LF, HF and LF/HF, showed significant differences between groups ($p<0.05$; $F=5.539$, $F=8.241$, $F=10.009$, $F=5.925$). Counter nodding and extension ROM were significantly different between groups ($p=0.022$, $p=0.009$; $U=115$, $F=7.62$). Intraclass Correlation Coefficient (ICC) values were 0.74 and 0.63 for RCPM, 0.88 and 0.71 for RCPMJ, and 0.82 and 0.61 for OCI at 2-hour and 1-day repetitions, respectively. Standard Error of Measurement (SEM) values were 12.2 and 14.1 mm^2 for RCPM, 11.2 and 12.3 mm^2 for RCPMJ, and 24.6 and 39.2 mm^2 for OCI. Eye cervical

re-education program group showed significant reduction in both systolic and diastolic blood pressure(p<0.05). There were no significant differences between groups forsuboccipital muscles cross-sectional area, and HRV RMSSD showed trends towards significance.
Conclusions: These findings suggest varying degrees of association and differences between normotensive and hypertensive stage 1 and 2 groups in HRV, ROM, and CSA measurements. Further exploration of these differences could provide valuable clinical insights. It seems that an eye cervical re-education program reduces blood pressure by applying a more proper positioning of upper cervical vertebrae.

Key Words: Hypertension, HRV, Cerv: cal ROM, Normotensive, Suboccipital Muscle Sonograph

The Impact of Spinal Posture on Brain Waves and Signals; A Novel Therapeutic Approach using Transcranial Electrical Stimulation

Dr. Mohammad Hassan Azarsa
Assistant Professor of Department of Physiotherapy, School of Rehabilitation Sciences, University of Social Welfare and Rehabilitation Sciences. Head of Physiotherapy Ward, Rofeideh Rehabilitation Hospital.

The intricate relationship between spinal posture and brain function has garnered significant attention in recent years, with implications for our understanding of cognitive processing and pain modulation. Individuals with normal posture, characterized by a straight and aligned spine, exhibit a typical pattern of brain wave activity, with alpha waves (8-12 Hz) dominant in the occipital and parietal regions. Individuals with abnormal spinal posture exhibited distinct brain wave activity patterns compared to those with normal spinal posture. Specifically, abnormal spinal posture was associated with increased alpha wave power in various brain regions, including the frontal, parietal, and temporal lobes, a frequency band typically indicative of relaxation and focus, reduced cortical activity, and increased parasympathetic activity, which is essential for cognitive processing and memory consolidation. Also, abnormal spinal posture was linked to decreased beta wave power, a frequency band often associated with attention, arousal, and cognitive processing, in the same brain regions. Additionally, the review found that abnormal spinal posture was accompanied by increased theta wave activity (4-8 Hz) in the frontal and temporal regions, suggesting increased stress and anxiety.

Therefore, the effects of abnormal spinal posture on brain wave activity were more pronounced in individuals with a history of musculoskeletal disorders or chronic pain, suggesting that spinal posture may play a critical role in modulating brain function in individuals with these conditions.

In light of these findings, transcranial electrical stimulation (tES) has emerged as a promising therapeutic approach to modulate brain activity and improve posture. tES involves the application of a weak electrical current to the brain, which can be used to stimulate specific brain regions and networks. By targeting the default mode network, tES has been shown to

reduce theta wave activity and improve cognitive performance. tES has also been shown to increase the activity of the prefrontal cortex, which is responsible for executive function, decision-making, and planning. This abstract proposes that tES may be a novel therapeutic solution for individuals with abnormal posture, aiming to restore normal brain wave patterns and signal transmission. By applying tES to the brain, individuals with abnormal posture may experience improved cognitive function, reduced stress and anxiety, and enhanced overall well-being.

Keywords: posture, brain waves, transcranial electrical stimulation, cognitive function, cognitive processing.

The Effect of High-Power Laser Therapy in Spine Surgery

Vahdat Mohammadi , Kamran ezzati
associate prof

Introduction: Since the effect of laser therapy has been proven in nerve regeneration, this study aimed to evaluate the effect of high-power laser therapy in patients with peripheral nerve injuries resulting from various spinal surgeries.

Methods and Materials**:** This case study includes four patients with conditions such as cauda equina syndrome, lumbar spine fracture, cervical discopathy with myelopathy, and delayed surgery for lumbar canal stenosis, all presenting with symptoms like balance difficulties and paresis.

All patients were referred to a physical therapy center four weeks after surgery. In addition to routine practices, such as exercise therapy and I.D.C. electrical stimulation, FDA-approved pulsed gallium arsenide laser therapy was administered. This therapy used wavelengths of 650 and 910 nm, a frequency of 5 to 14 kHz, and an average power of 0.5 to 1 watt per square centimeter (10-15 J/cm^2).

The first ten sessions were conducted with one-day intervals, followed by twice-weekly sessions for the next ten sessions, and once-weekly sessions for the final ten sessions.

Results: It appears that using high-power laser therapy with adequate dosage in patients with peripheral nerve injuries following spinal surgery not only reduces recovery time but also decreases the number of treatment sessions and may lessen complications.

Conclusion: It is recommended that the kind of laser therapy described be used in more patients to establish this approach with greater certainty.

Key words : High-power laser therapy , Peripheral nerve injuries ,Spine surgery ,Gallium arsenide laser.

Magnet applications in musculoskeletal diseases

Shaghayegh Fouladvandi
Physiotherapist

Introduction:The therapeutic effect of the application of pulsed magnetic field therapy (PMFT) has at last received world-wide recognition, although for a long time many practitioners saw it only as an aid to fracture union. Research has now shown that it has the potential to improve a wide range of conditions, although few understood just how it achieved its effectiveness. Extensive research has since been carried out to determine the mechanism by which this occurs. For the physiotherapist, presented with a wide range of clinical problems, PMFT is an invaluable aid to the clinic.

Article Body: The value of pulsed magnetic field therapy has been shown to cover a wide range of conditions, with well documented trials carried out by hospitals, rheumatologists and physiotherapists. For example, the department of rheumatology at Addenbrookes Hospital 5 (1984), carried out investigations into the use of PMFT for the treatment of persistent rotator cuff tendinitis. The treatment was applied to patients who had symptoms refractory to steroid injection and other conventional treatments. At the end of the trial, 65% of these were symptom free, with 18% of the remainder being greatly improved.

Lau 6 (School of Medicine, Loma University, USA) reported on the application of PMFT to the problems of diabetic retinopathy. Patients were treated over a 6 week period. 76% of the patients had a reduction in the level of numbness and tingling. All patients had a reduction of pain, with 66% reporting that they were totally pain-free.

Many research studies, including Lau 7, reported on the application of PMFT for conditions such as sports injuries and for patients with joint and spinal problems. Although these are too numerous to mention individually, in almost every instance there was a reduction, if not complete resolution of symptoms. Soft tissue injuries and joint pains tended to be resolved within 5 days of treatment. Patients with cervical problems and low back pain were also successfully treated, whereas previous treatment with ice, traction and other therapies had been unsuccessful. In yet another trial, the effect of applying PMFT to sufferers of Multiple Sclerosis was investigated (Geseo A.8 1987). 70% of sufferers had a reduction of weakness, pain and spasticity, with 50% reporting improvement of their bladder incontinence.

Result: Through the evaluation of hundreds of research papers, a number of points have been established regarding PMFT:

a) The field must be pulsed, with low frequency and low intensity to achieve the best effect.
b) Different conditions require different frequencies. For example, 5Hz causes vaso-constriction whilst 10Hz and above causes vaso-dilation.
c) Biological effectiveness is achieved in just 10 minutes for most injuries, so that long treatment sessions are not required.
d) When used at the correct level there are no recorded side effects. Although PMFT is not yet recommended for use during pregnancy or in the presence of tumours, there are papers to suggest that magnetic fields can inhibit the growth of tumours.

Revolutionizing Trophic Disorder Treatment: The Role of SmartStim Technology

Dr. Hamidreza Goodarzi

Abstract

SmartStim technology represents a significant advancement in neuromodulation, particularly for treating trophic disorders that involve nerve degeneration and impairments in sensory and motor functions. By utilizing advanced algorithms and real-time feedback, SmartStim delivers customized electrical stimulation that promotes nerve regeneration and enhances trophic support. Clinical trials have shown its efficacy in managing conditions such as diabetic neuropathy and complex regional pain syndrome, thereby improving patient outcomes.

Additionally, SmartStim is increasingly integrated into rehabilitation protocols, facilitating neuroplasticity and enhancing functional recovery post-injury or surgery. Its versatility extends to remote patient monitoring and telehealth applications, allowing for continuous therapeutic engagement in chronic conditions. Overall, the application of SmartStim in trophic disorders holds great promise across various clinical domains, with further research needed to optimize its use and fully realize its potential in improving patients' quality of life.

The Role of Virtual Reality in Enhancing Rehabilitation Outcomes After Spinal Cord Injury

Ghazal Hashemi PT; PhD, Dr. MohammadMahdi Soleimani

Background: Spinal cord injuries (SCI) are often accompanied by significant motor deficits, balance impairments, and chronic neuropathic pain, which pose challenges for effective rehabilitation. Virtual Reality (VR) has emerged as a promising technology, offering immersive and task-specific environments that augment traditional rehabilitation and potentially enhance motor recovery, balance, and pain management.

Objective: This systematic review examines the effectiveness of VR-based rehabilitation in improving motor function, balance, and pain outcomes in patients with SCI, with a focus on synthesizing findings from clinical trials and observational studies.

Methods: A systematic review was conducted across major databases, including PubMed, Scopus, and Web of Science, focusing on studies published between 2010 and 2023. Inclusion criteria were studies involving adults with SCI who underwent VR-assisted rehabilitation, with reported outcomes on motor recovery, balance, and pain. A total of 18 studies comprising 735 patients were included, with intervention durations ranging from 4 to 12 weeks. Data were extracted on intervention protocols, patient demographics, and outcome measures, including Walking Index for Spinal Cord Injury (WISCI), Berg Balance Scale (BBS), and Visual Analog Scale (VAS) for pain.

Results: The synthesis of evidence revealed that VR-based interventions significantly improved rehabilitation outcomes in SCI patients. Improvements in motor function were consistently reported, with enhanced walking abilities, grip strength, and task-specific motor skills. Balance metrics, including dynamic stability and postural control, also demonstrated notable advancements. Pain reduction was observed across multiple studies, with patients reporting decreased neuropathic pain levels during and after VR sessions. Furthermore, VR's engaging and interactive nature increased patient adherence and motivation, while preliminary evidence suggested positive effects on neuroplasticity through enhanced cortical activation and neural connectivity.

Conclusion: VR-based rehabilitation presents a promising, patient-centered approach for enhancing motor recovery, balance, and pain management in individuals with SCI. By providing an engaging and task-specific environment, VR facilitates patient's participation and may promote neuroplasticity. Despite its available potential, further research is needed to standardize protocols, evaluate cost-effectiveness, and confirm long-term outcomes in larger and more diverse populations.

Keywords: Virtual Reality, Spinal Cord Injury, Rehabilitation, Systematic Review, Motor Recovery, Balance, Neuropathic Pain

Robotic Spinal Disc Surgery: Precision, Benefits, and Challenges

Mohammad Mahdi Soleimani
MD ,Neurosurgeon , Tehran Payambaran hospital

Abstract

Robotic spinal disc surgery represents a groundbreaking advancement in spinal care, integrating robotic precision with minimally invasive techniques to enhance surgical accuracy and improve patient outcomes. By assisting surgeons in the precise placement of instruments and implants, robotic systems minimize human error and contribute to better post-operative results. The application of robotics in spinal surgery offers significant advantages, particularly in complex procedures requiring high precision and stability.

One of the key benefits of robotic assistance in spine surgery is the increased accuracy in pedicle screw placement, a critical factor in the success of spinal fusion procedures. Studies indicate that robot-assisted surgery significantly enhances the precision of screw placement, leading to improved biomechanical stability and reducing the risk of complications such as neural damage or hardware failure. Additionally, robotic technology helps reduce radiation exposure for both patients and surgeons by enabling more efficient and targeted intraoperative imaging.

The combination of minimally invasive techniques with robotic assistance further amplifies the advantages for patients. These approaches typically require smaller incisions, leading to less soft tissue disruption, reduced intraoperative blood loss, and shorter hospital stays. Moreover, robotic systems provide enhanced visualization and control within confined surgical fields, facilitating safer and more effective procedures. Patients undergoing robot-assisted minimally invasive spinal surgery often experience faster recovery times and improved post-operative comfort compared to traditional open surgery.

Despite its numerous advantages, the adoption of robotic spinal surgery is associated with several challenges. The high initial investment cost for acquiring and maintaining robotic systems poses a financial barrier for many healthcare institutions. Additionally, surgeons and operating room staff must undergo extensive training to become proficient in using these systems, which may slow the widespread adoption of the technology. Furthermore, technical malfunctions and system errors remain a potential risk, necessitating continuous monitoring and advancements in robotic software and hardware.

In summary, robotic spinal disc surgery represents a significant evolution in spinal surgery, offering unparalleled precision and supporting minimally invasive techniques that improve patient outcomes. The ability of robotic systems to enhance accuracy, reduce surgical risks, and minimize post-operative recovery times makes them a valuable asset in modern spine surgery. However, financial considerations, the need for specialized training, and potential technical limitations must be addressed to facilitate broader integration into clinical practice. As technology continues to evolve, further research and innovation will likely expand the capabilities and accessibility of robotic spinal surgery, paving the way for safer and more effective spinal procedures in the future.

Lower Back Pain with Constipation: Relation, Causes and Treatment

Dr. Maryam Alizadeh

Introduction:Previous observational studies have reported an association between lumbosacral radiculopathy (LSR), a form of low back pain (LBP) with nerve root involvement, and constipation. However, it is unclear whether this association is due to confounding variables such as comorbidities and medications.

Objectives: This study explores the possible association between LSR and constipation, with the hypothesis that adults with LSR have increased odds of developing constipation compared with those with nonradicular LBP.

Methods: Adults aged 18 to 49 years with incident LSR and nonradicular LBP were identified from a national 70 million patient electronic health records network (TriNetX). Propensity score matching (PSM) was used to control for covariates and determine the odds ratio (OR) of constipation over a 1-year follow-up. Lumbar stenosis, cauda equina syndrome, and inflammatory bowel diseases were excluded.

Results: After PSM, 503,062 patients were in each cohort. Before PSM, the likelihood of constipation was identical between cohorts (LSR 10.8% vs 10.9%; OR [confidence interval] = 0.99 [0.98-1.0], P = 0.251). This association was unchanged after PSM (LSR 10.8% vs 11.1%; OR [confidence interval] = 0.98 [0.97-0.99]; P = 0.003).

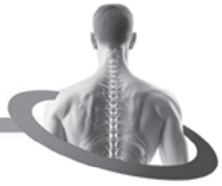
Conclusions: The study hypothesis can be refuted given that the OR approximated the null in a large propensity-matched sample. Patients with LSR have equivalent odds of constipation compared with those with nonradicular LBP, suggesting that LSR is not a direct cause of constipation. The similar risk of constipation between cohorts could be explained by factors common to LBP in general, such as pain severity, physical inactivity, and constipating medications.

The contribution of exoskeleton to the spinal health

Nastaran Bahadorani, MSc, PT
Tehran University of Medical Sciences

Abstract

Modern lifestyles often involve repetitive tasks and movement patterns that contribute to musculoskeletal disorders, including spinal pathologies. Exoskeletons, as innovative assistive devices, play a crucial role in preventing and managing these conditions by redistributing loads and supporting movement. This review explores the potential of exoskeletons in spinal health, highlighting their preventive applications and therapeutic benefits in reducing strain and enhancing recovery.



Applicability of using dynamic MRI to evaluate alleged cranial rhythmic impulse (CRI)

Pezhman Masoudi, Noureddin Karimi, Iraj Abdollahi, Enayatollah Bakhshi, Saeideh Moravej, Ahmad Aghazadeh

Abstract

Objectives: To evaluate the feasibility of using dynamic MRI to measure the features of cranial rhythmic impulse (CRI).

Design and setting: Fifteen healthy participants (9 females and 6 males, aged 25 to 77) underwent dynamic MRI in a sagittal T2 HASTE view at a rate of 0.60 Hz for 30 s. The MRI videos were analyzed using video tracking software. Three points were marked: the glabella, the midpoint of the sella turcica, and a symmetrical point of the glabella on the occiput. The distances between these points were measured across 46 frames. Amplitudes and rates of asymmetrical CRI waves were calculated using Excel formulas.

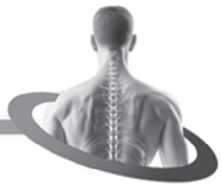
Results: The mean wave frequencies were 5.65 Hz for the anteroposterior distance, 6.2 Hz from sella turcica to occiput, and 6.76 Hz from sella turcica to glabella. The mean wave amplitudes were 0.39 mm, 0.6 mm, and 0.49 mm for the respective distances. Both intraclass correlation coefficients (ICC) and reliability coefficient (R) indicated excellent reliability (RICC > 0.90). The technical error of measurement (TEM) exceeded 1 mm for the anteroposterior and sella-to-occiput distances, while it was 0.32 mm for the sella-to-glabella distance.

Conclusions: Dynamic MRI demonstrates potential in measuring the features of CRI, particularly in assessing CRI wave rate. While the ICC values indicate high reliability, the TEM values suggest that using MRI to measure CRI wave amplitude may only be dependable for the distance from the sella to the glabella.

Investigating the effect of low power laser and magnet therapy in the treatment of animals with spinal cord injury (case report)

Zeynab Vasheghani Farahani

Canine spinal cord injuries (SCIs) can significantly impact a dog's mobility and quality of life. The prognosis for a canine spinal cord injury (SCI) varies widely depending on several factors, including the severity and location of the injury, the dog's overall health, the promptness of treatment, and the individual's response to therapy. A thorough assessment of a canine spinal cord injury is essential before developing a treatment plan. It involves gathering a detailed history, conducting a comprehensive physical and neurological examination, and utilizing imaging techniques when necessary. Grading canine spinal cord injuries (SCIs) is essential for assessing the severity of the injury, determining the prognosis, and guiding treatment plans. Several grading systems are utilized, with the most common being the Modified Frankel Scale and the Integra Classification System. Physiotherapy can play a crucial role in the rehabilitation of dogs with spinal cord injuries (SCIs). With the right physiotherapy approach, many dogs with spinal cord injuries can lead fulfilling lives. Proper diagnosis is crucial for effective treatment and rehabilitation. Some dogs, especially with mild injuries or incomplete injuries, may fully regain function, potentially returning to normal activity levels. Many dogs may experience varying degrees of recovery with time, such as regaining ambulation, improved coordination, and decreased pain. Unfortunately, some dogs with complete injuries may not regain significant function, and mobility aids, such as wheelchairs, may be necessary for daily living. A veterinary physiotherapist can determine the most appropriate modalities based on the dog's specific needs and the severity of the injury. In canine spinal cord injury physiotherapy, several modalities can be effective in promoting recovery and improving the quality of life. Laser therapy (LLLT), is increasingly utilized in the treatment of spinal cord injuries (SCIs) in animals, including dogs. This non-invasive therapy leverages specific wavelengths of light to promote healing and reduce pain. Laser therapy represents a valuable option in the comprehensive management of spinal cord injuries in dogs, helping to alleviate pain, promote healing, and facilitate rehabilitation. The laser can be directed at specific areas around the spine and limbs to help manage localized pain and promote healing in affected muscles and nerves. Another modality for dogs SCIs is magnet therap. Magnet therapy involves placing magnets on or near the affected



areas of the body. The magnetic fields are believed to influence cellular functions, improve circulation, and reduce inflammation. Magnets can potentially affect ion movement and improve blood flow, thereby enhancing nutrient and oxygen delivery to damaged tissues. In this research, an investigation was conducted on a small indigenous dog and cat, which had no detailed information about their injury history, and the veterinarian introduced us to a supportive and rescuer for physical therapy. The new low-power 810 nm laser was used for 5 minutes and 33 seconds and 99.9 joules daily for 20 sessions. And the new magnet was used for 30 minutes for the subject. The results after twenty sessions, although it did not lead to a complete recovery, but it was able to help return the movement of the desired case. The biggest obstacle in conducting this research was the lack of similar research and the lack of access to more cases to conduct research in both intervention and control groups. It is hoped that with the activation of the physiotherapy branch in animals and conducting more research, more research will be done in this field.

The effect of acute Plantar Flexor Muscles Fatigue on postural control of upright stance in people with chronic low back pain

Maryam Rafiee[1,2], Maryam saadat[2,3], Masumeh Hessam [2,3], Majid Ravanbakhsh [2,3], Mohammad Mehravar [2,3]
1.Student Research Committee, Ahvaz Jundishapur University of Medical Sciences, Ahvaz,Iran.
2.Musculoskeletal Rehabilitation Research Center, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran.
3.Physiotherapy Department, School of Rehabilitation Sciences, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran

Background: Postural control is impaired after chronic low back pain(CLBP) and in fatigued conditions. However, little is known about plantar flexor(PF) muscles fatigue-induced alterations of postural control in individuals with CLBP.

Objective: This study aimed to compare the effects of plantar flexor fatigue on postural control between individuals with and without CLBP.

Method: 36 individuals with CLBP and thirty-six healthy subjects participated in this study. Postural stability was assessed using a force plate before and after a fatigue protocol, including heel raise exercise. Foot center-of-pressure (CoP) data were collected in quiet standing under a rigid surface with eye open(EO), rigid surface with eye closed(EC), and foam surface with eye closed(FC) conditions. Mean velocity, the area of the 95% confidence ellipse, and standard deviation of velocity in the anteroposterior and mediolateral directions of the center of pressure were measured.

Results: In post fatigue, higher variability of sway velocity in ML direction in foam closed condition($p=0.035$) and greater sway area in eye closed condition ($p=0.027$) were observed in individuals with CLBP compared to healthy controls. Our finding showed that all participants had greater postural sway after fatigue in more difficult postural task (EC) compared to easier postural task (EO)($p<0.01$). Nevertheless, decreased postural stability with plantar flexor fatigue does not depend on increased levels of postural task difficulty in FC condition ompared to EO($p>0.05$).

Conclusions: Localized plantar flexor muscle fatigue impaired postural control in both groups of CLBP and healthy, with more prominent effect in individuals with CLBP. This effect was more accentuated when visual information was removed.

Which kind of imaging is helpful in diagnosing nonspecific low back pain?

Shahin Goharpey,
Ph.D physical therapy

Lower back pain (LBP) is one of the most common chief complaints encountered in primary care. Advanced imaging studies, including computerized tomography (CT) and magnetic resonance imaging (MRI), are frequently ordered in the setting of LBP. Structural abnormalities are commonly identified by CT and MRI in patients complaining of low back pain, however, these findings are also found in asymptomatic patients. In the past decade, multiple guidelines have been published to help providers identify patients in whom the use of advanced imaging is appropriate.

Radiography is the initial imaging study of choice for assessing LBP in patients with a history of trauma and patients suspected of having possible abnormalities in spine.

Imaging findings, such as disk degeneration, facet arthropathy, and disk herniations, have been attributed as causative factors for LBP; however, these structural abnormalities are present in a large proportion of asymptomatic individuals and the incidence of these findings increases with age.

For diagnosing non-specific LBP it is not necessary use MRI, mostly patient has spinal negative balance and only a whole spine radiography is most efficient than other kind of imaging.

Evaluation of the effects of lumbopelvic manipulation on the central nervous system plasticity in non-specific chronic low back pain patients by magnetic resonance spectroscopy technique.

Daryoush Didehdar
PT,PhD, Assistant Professor Department of Physical Therapy, Behbahan Faculty of Medical Sciences, Behbahan, Iran.

Background: In patients with chronic non-specific low back pain (NCLBP) brain function changes due to the neuroplastic changes in different regions.

Aim: The current study aimed to evaluate the brain metabolites changes after spinal manipulation, using the proton Magnetic Resonance Spectroscopy (^{1}H-MRS).

Methods: In the current study, 25 patients with NCLBP aged 20-50 years were enrolled. Patients were randomly assigned to lumbopelvic manipulation or sham. Patients were evaluated before and five weeks after treatment by Numerical Rating Scale (NRS), Oswestry Disability Index (ODI), and ^{1}H-MRS.

Results: After the treatment, severity of pain and functional disability were significantly reduced in the treatment group vs. sham group ($p<0.05$). After treatment, the N-Acetyl Aspartate (NAA) in thalamus, insula, dorsolateral prefrontal cortex (DLPFC) regions, as well as choline (Cho) in the thalamus, insula and somatosensory cortex (SSC) regions had increased significantly in the treatment group compared to the sham group. ($p<0.05$) A significant increase was further observed in NAA in thalamus, anterior cingulate cortex(ACC), and SCC regions along with Cho metabolite in thalamus and SCC regions after treatment in the treatment group compared with the baseline measures($p<0.05$). Also, a significant increase was observed in Glx (glutamate and glutamine) levels of thalamus($P = 0.03$). There was no significant difference in terms of brain metabolites at baseline and after treatment in the sham group.

Conclusion: In the patient with low back pain, spinal manipulation affects the central nervous system, and changes the brain metabolites. Consequently, pain and functional disability are reduced.

Keywords: Spinal Manipulation, Low Back Pain, ^{1}H-MRS

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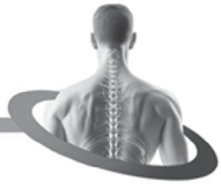
دکتر ناهید رحمانی
دانشیار گروه فیزیوتراپی دانشگاه علوم توانبخشی و سلامت اجتماعی

فیزیوتراپی تأثیر زیادی در بهبود کیفیت زندگی ورزشکاران با آسیب ستون فقرات دارد. این درمان‌ها باعث کاهش درد، بهبود انعطاف‌پذیری، افزایش قدرت عضلات و بازگشت به فعالیت‌های روزمره و ورزشی می‌شود.
با انجام تمرینات منظم و استفاده از تکنیک‌های فیزیوتراپی، ورزشکاران می‌توانند بهبودی سریع‌تر و مؤثرتری را تجربه کنند. این درمان‌ها شامل ماساژدرمانی، الکتروتراپی، تمرینات تقویتی و کششی، و مشاوره‌های تخصصی در زمینه حرکات صحیح بدن و تکنیک‌های ورزشی است.
فیزیوتراپی همچنین می‌تواند به کاهش استرس و اضطراب ناشی از آسیب کمک کرده و بهبود روانی و احساسی ورزشکاران را تسهیل کند. در نتیجه، ورزشکاران با اعتمادبه‌نفس بیشتری به فعالیت‌های ورزشی و زندگی روزمره خود بازمی‌گردند.

جنبه های روان‌شناختی بازگشت به ورزش در ورزشکاران حرفه ایی پس از آسیب

دکتر پیمانه شیرین بیان
عضو هیات علمی مرکز تحقیقات توانبخشی اعصاب اطفال

چکیده
بازگشت به ورزش پس از آسیب‌دیدگی، علاوه بر چالش‌های جسمانی، تحت تأثیر عوامل روان‌شناختی متعددی قرار دارد که می‌توانند بر روند توانبخشی و عملکرد ورزشکار تأثیر بگذارند مطالعات نشان می‌دهند که عوامل روان‌شناختی تأثیر قابل توجهی بر بازگشت به فعالیت‌های ورزشی پس از آسیب دارند. تحقیقات نشان می‌دهند که ترس از آسیب مجدد ، یکی از موانع اصلی در بازگشت به سطح پیشین عملکرد است، زیرا می‌تواند موجب اجتناب از فعالیت‌های فیزیکی و کاهش اعتمادبه‌نفس در ورزشکاران شود. از سوی دیگر، اعتمادبه‌نفس و انگیزه درونی نقش کلیدی در افزایش تعهد به فرایند توانبخشی و بهبود عملکرد پس از آسیب دارند. همچنین، حمایت اجتماعی از سوی هم‌تیمی‌ها، مربیان و خانواده می‌تواند استرس و اضطراب مرتبط با بازگشت به رقابت را کاهش داده و موجب تسریع در روند بازگشت ورزشکاران شود. در این میان، درک و مدیریت درد نیز یکی دیگر از فاکتورهای تأثیرگذار است که می‌تواند بر میزان تحمل ورزشکار و تطابق وی با شرایط جدید پس از آسیب اثر بگذارد. متخصصان سلامت روان و توانبخشی باید به مداخلات روان‌شناختی، از جمله تقویت انگیزه، تنظیم اهداف واقع‌بینانه و ارائه حمایت اجتماعی، توجه ویژه‌ای داشته باشند تا از بازگشت موفق و پایدار ورزشکاران به فعالیت‌های ورزشی اطمینان حاصل شود. این مداخلات نه تنها روند بهبودی را تسهیل می‌کند، بلکه از بازگشت زودهنگام و احتمال آسیب مجدد نیز جلوگیری می‌کند.
با توجه به اهمیت این عوامل، در این پنل به بررسی جدیدترین یافته‌های علمی، راهکارهای عملی برای مداخلات روان‌شناختی و شیوه‌های بهبود آمادگی ذهنی ورزشکاران برای بازگشت به ورزش خواهیم پرداخت. هدف این پنل، ارائه راهکارهایی برای مربیان، روانشناسان ورزشی و کادر درمانی است تا با در نظر گرفتن این جنبه‌های روان‌شناختی، روند بازگشت ورزشکاران حرفه‌ای به سطح بالای رقابت را بهینه‌سازی کنند.



بازگشت به ورزش پس از آسیب‌های ستون فقرات در ورزشکاران حرفه‌ای

دکتر افشین جنابی

مقدمه: آسیب‌های ستون فقرات در ورزشکاران حرفه‌ای چالش‌های توانبخشی منحصربه‌فردی ایجاد می‌کنند که نیازمند تعادل دقیقی بین بهبودی، بهینه‌سازی عملکرد و پیشگیری از آسیب مجدد است. فرایند بازگشت به ورزش (RTS) باید بر اساس جدیدترین پروتکل‌های مبتنی بر شواهد انجام شود تا ایمنی ورزشکار و حفظ عملکرد طولانی‌مدت او تضمین گردد.

هدف: این پنل با هدف بررسی عمیق راهکارهای توانبخشی، ملاحظات بیومکانیکی و تمرینات خاص ورزشی برای بازگشت موفق به ورزش پس از آسیب‌های ستون فقرات برگزار می‌شود. در این پنل، جدیدترین پژوهش‌ها، گایدلاین‌های به‌روز و رویکردهای عملی مورد استفاده توسط متخصصین توانبخشی ارائه خواهند شد.

روش‌ها: این جلسه شامل دو بخش است:

۱. مبانی نظری - بررسی پژوهش‌های جدید، معیارهای بازگشت به ورزش و گایدلاین‌های به‌روز در توانبخشی آسیب‌های ستون فقرات.

۲. کاربردهای عملی - نمایش تمرینات عملکردی، آموزش عصبی-عضلانی و تمرینات تخصصی ورزشی برای بازگرداندن ورزشکاران به سطح حرفه‌ای.

نتایج و بحث: این پنل با ادغام اصول علمی و تکنیک‌های عملی توانبخشی، چارچوبی ساختاریافته برای بازگشت به ورزش ارائه خواهد داد که به ورزشکاران کمک می‌کند بدون افزایش خطر آسیب مجدد به فعالیت حرفه‌ای خود بازگردند. همچنین، مطالعات موردی و کاربردهای واقعی در ورزش‌های مختلف مورد بحث قرار خواهند گرفت

New Exercises for correcting Kyphosis

Aref Saidi PT; Sports pathology phd
Pesident of corrective exercise branch of iran pta President of iranbbf s medical committee Member of Asian powerlifting s medical committee

Abstract

New exercises for correcting kyphosis focus on strengthening the back, improving flexibility, and promoting better posture. Here are some of the most effective and recently recommended exercises:

1. Thoracic Extension Exercises:

o Sit or stand with your back straight, clasp your hands behind your head, and gently arch backward to open up the thoracic spine. Perform 10 reps daily.

2. Scapular Retraction:

o Squeeze your shoulder blades together while standing or sitting upright. Hold the position for 10 seconds, repeating 5-10 times. This strengthens the muscles that counteract forward slouching.

3. Modified Cobra Pose:

o Lie on your stomach with hands near your ribs. Gently lift your head and chest while keeping your pelvis grounded. This strengthens the back extensors and improves posture 4. Locust Pose :

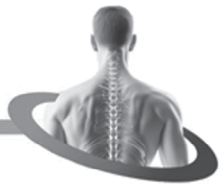
o Lie face down, lift your head, chest, arms, and legs slightly off the ground while engaging your back muscles. Hold for a few seconds,focusing on maintaining a lengthened spine

5. Wall Angels:

o Stand with your back against a wall, arms bent at 90 degrees, and slowly move them up and down like creating "snow angels." This improves upper back mobility and posture

6. Pectoral and Hamstring Stretches:

o Stretching these muscle groups can counteract forward pulling of the spine, maintaining balance in posture Incorporating these exercises consistently, paired with mindfulness about daily posture (e.g., sitting upright and engaging core muscles), can significantly improve kyphosis over time. For personalized plans, consulting a physiotherapist is recommended.



prevalence of kyphosis and improving the ergonomics of the work environment

Javad Hadadi
PHD Student of Physiotherapy, Department Physiotherapy School of Rehabilitation, Tehran university of Medical Sciences (TUMS)

ABSTRACT: The prevalence of kyphosis, or the abnormal forward deviation of the spine, is one of the common problems among employees, which occurs especially in workplaces with poor posture. This situation can lead to chronic back and neck pain, reduced work quality and even more serious musculoskeletal injuries in the long term. One of the effective ways to reduce the prevalence of kyphosis is to improve the ergonomics of the work environment. Correctly adjusting the chair, desk and computer equipment, as well as encouraging changing body positions and doing stretching exercises can help reduce the pressure on the spine. Paying attention to these issues not only helps to improve the physical condition of people, but can also improve work efficiency and job satisfaction of employees. In this presentation, we will review the prevalence of kyphosis and ways to improve the ergonomics of the workplace.

Keywords: Ergonomics, kyphosis, Prevalence, Narrative review

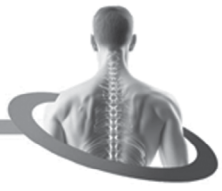
An Update on NASM Approach to Corrective Exercises Training in Individuals with Increased Thoracic Kyphosis

Vahid Mazloum[1], Masoume Matin[2]
1.Physical Therapist, PhD in Sports Injuries and Corrective Exercises, Tehran, Iran.
2.Department of Physiotherapy, School of Rehabilitation Sciences, Iran University of Medical Sciences, Tehran, Iran.

ABSTRACT

Increased thoracic kyphosis (ITK) is considered as a common postural misalignment with severe physical and psychological consequences raising the concern about its complications. Poor habitual posture, occupational physical stress, congenital conditions, progressive neurological disorders, muscular imbalances, and other medical conditions are assumed as the etiology of ITK. However, there are two primary therapeutic options for the management of ITK, including aggressive interventions (e.g. surgical treatments) and conservative methods (e.g. therapeutic and corrective exercises training). Meanwhile; National Academy of Sports Medicine (NASM) has represented a comprehensive therapeutic exercise program which is called NASM Corrective Exercise Continuum for the conservative management of postural abnormalities such as ITK. In the current presentation, we are going to have a brief review on the properties, advantages, disadvantages, and other aspects of this corrective exercise program for clients with ITK.

Keywords: Thoracic kyphosis; Posture; Corrective exercise; Narrative review.



Correlation between chronic nonspecific low back pain and pelvic floor dysfunctions

Somayeh Mohamadi
University of Social Welfare and Rehabilitation Science

Abstract

Chronic non-specific low back pain (CLBP) and pelvic floor dysfunctions (PFD) are two interrelated conditions that significantly impact quality of life and functional capacity. Growing evidence suggests a strong correlation between CLBP and PFD, driven by shared anatomical, biomechanical, and neuromuscular mechanisms. The pelvic floor muscles, which play a critical role in core stability and lumbopelvic coordination, may become dysfunctional in individuals with CLBP due to altered movement patterns, muscle imbalances, or compensatory strategies. Conversely, PFD, such as pelvic floor hypertonicity, weakness, or incoordination, can contribute to CLBP by disrupting pelvic stability and increasing stress on the lumbar spine. Psychological factors, including chronic stress and anxiety, further exacerbate this relationship, as they are associated with both conditions. Despite the clinical relevance of this correlation, the underlying mechanisms remain poorly understood, highlighting the need for further research. A multidisciplinary approach that integrates physical therapy, pelvic floor rehabilitation, and psychological support may offer more effective management for individuals with coexisting CLBP and PFD. Recognizing and addressing this bidirectional relationship is essential for improving patient outcomes and reducing the burden of these chronic conditions.

Keywords: chronic non-specific low back pain, pelvic floor dysfunction, lumbopelvic stability, neuromuscular mechanisms, chronic pain, multidisciplinary rehabilitation.

Knee joint repositioning error in different trunk positions among females with chronic nonspecific low back pain: A cross-sectional study

Tahereh Rezaeian[1], Zahra Mosallanezhad[2]
1.PhD, PT, Assistant Professor, Department of Physical Therapy, Faculty of Allied Medicine, Kerman University of Medical Sciences, Kerman, Iran.
2.PhD, PT, Assistant Professor, Department of Physical Therapy, University of Social Welfare and Rehabilitation Sciences, Tehran, Iran.

Background: Proprioception is a self-perceived sense of position and movement of one's body and its deficits can lead to motor control problems such as delayed muscle reflexes. Previous studies have confirmed lumbar proprioception impairments among individuals with Low Back Pain (LBP), which can afflict the normal central sensory-motor control and hence increases the risk of abnormal loading on the lumbar spine. Although the local investigation of proprioception is important, its influence on other joints in a kinetic chain particularly between extremities and spine should not be ignored. Therefore, the aim of this study was to compare the proprioception of knee joint in different trunk positions among females with chronic nonspecific low back pain (CNSLBP) and healthy females.
Method: The study included 24 healthy subjects and 25 patients with CNSLBP participated in this study. Repositioning error of knee joint in four different lumbar positions including flexion, neutral position, 50% ROM of left rotation and 50% ROM right rotation was evaluated using an inclinometer. Absolute error and constant error were obtained and analyzed.
Results: Absolute error in flexion and neutral positions in the individuals with CNSLBP were significantly higher than in healthy individuals ($p = 0.01$); while there was no statistically significant inter-group difference in terms of constant joint reposition error ($p > 0.05$). In regards to lumbar right and left rotations, neither the absolute nor the constant errors showed a statistically significant difference between patients with CNSLBP and healthy individuals ($p > 0.05$). The analysis showed that trunk different positions affected absolute repositioning error in healthy group, while it was unable to identify any significant differences in constant knee joint repositioning error in any trunk position ($p > 0.05$). In evaluating the values among CNSLBP no significant differences were found in constant and absolute error in trunk different positions.
Conclusion: The results of the present study showed that absolute knee joint reposition error in lumbar flexion and neutral positions in the CNSLBP group was significantly greater than that of the knee joint in the healthy participants. There was, however, no significant difference between the CNSLBP group and the control group when constant reposition error of the knee was evaluated in different positions of the trunk.
Keywords: Kinesthesia; Low back pain; Knee joint; Position sense.

اختلالات پوسچرال در کودکان و نوجوانان

ملیحه حاتمی نیا
کارشناس ارشد فیزیوتراپی

کودکان در معرض اختلالات مختلفی هستن و شایع ترین آنها اختلالات عضلانی و اسکلتی می‌باشد . عادات روزمره و سبک زندگی مدرن که امروزه به شکل غیر استاندارد مرسوم شده باعث می شود افراد ازدوران کودکی ناراحتی و دردهای متنوعی در سیستم عضلانی و اسکلتی تجربه کنند .

از شایع ترین این معضات اختلالات گوناگون در ناحیه ستون فقرات کودکان است که شامل درد گردن،درد کمر ، اسکولیوز، کایفوز و لوردوز می باشد .با وجود این اختلالات عضات ناحیه ستون فقرات نیز درگیر می شوند و نقاط دردناکی را ایجاد می کنند . مطالعات نشان داده که این اختلالات در جامعه رو به افزایش هست و مهم ترین علت سبک غلط زندگی است . بی تحرکی ، عدم انجام ورزش ، عدم شرکت در باز یهای جمعی ، تغذیه نامناسب ، استفاده از موبایل و کامپیوتر در سنین پایین و اطاع نداشتن از وضعی تهای استاندارد حرکتی ،عوامل مهمی در ایجاد این اختلالات هستند.در نتیجه می توان با اصاح سبک زندگی تا حدی در پیشگیری از این اختلالات نقش داشت .

انواع اختلالات ستون فقرات در کودکان و نوجوانان

کایفوز: به حالتی گفته می شود که ستون فقرات به طور غیر طبیعی و بیش از حد به جلو خم می‌شود به ویژه در ناحیه قفسه سینه لوردوز : به انحنای بیش از حد ستون فقرات در ناحیه کمر گفته می شود ومعمولا به شکل بیرون زدگی شکم و یا تو رفتگی کمر توصیف می کنند

اسکولیوز : به انحراف طرفی ستون فقرات گفته می شود و به طور کلی انحنای بیش از ۱۰ درجه غیر طبیعی است .

تورتیکولی :کج شدن سر و گردن کودک به یک سمت تورتیکولی گفته می شود .

راههای تشخیص این اختلالات، معاینات فیزیکی توسط متخصص و بررسی رادیواوژی و ام ار ای می باشد . تشخیص به موقع می تواند برای شروع درمان زود هنگام بسیار مهم باشد . زیرا اگر درمان به موقع انجام نشود می تواندمنجر به مشکلات جدی تر برای ستون فقرات کودک در آینده ایجاد کند از جمله کمر درد ، ظاهر نامتناسب و در موارد شدیدتر مشکلات تنفسی آموزش وضعی تهای صحیح برای پیشگیری از اختلالات موثر است ، طرز صحیح نشستن هم موجب حفظ حالت

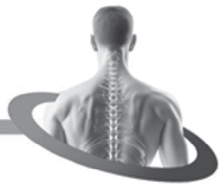
طبیعی ستون فقرات می شود و در نتیجه عضات هر قسمت مجبور نیستند که برای جبران وضعیت غلط نشستن یا ایستادن ما کار بیشتری کنند و در نتیجه دچار اسپاسم و خستگی و کوفتگی شوند .

آموزش پوزیش نهای صحیح هنگام استفاده از موبایل و کامپیوتر بسیار اهمیت دارد .

آموزش حمل صحیح کوله پشتی در سن مدرسه و آموزش حرکات اصلاحی درهر یک از اختلالات در مراحل اولیه به پیشگیری کمک می کند .

در کودکان تورتیکولی نیز آموزش نحوه صحیح خواباندن کودکان وطرز درآغوش گرفتن مهم است.

فیزیوتراپی می تواند با آموزش های مناسب به پیشگیری کمک کند و در صورت نیاز اقدامات درمانی مناسب را نیزبه کار گیرد.



نقش فاشیا در بهینه سازی تمرینات اصلاحی برای کیفوز

ارسلان قربان پور
استادیار فیزیوتراپی دانشگاه علوم پزشکی تهران

کیفوز، انحنای غیرطبیعی ستون فقرات در ناحیه قفسه سینه، یکی از مشکلات شایع حرکتی است که م ی تواند به عوارض جسمی و روانی منجر شود. در این راستا، توجه به فاشیا، به عنوان یک ساختار همبند کلیدی، می تواند در بهینه سازی تمرینات اصلاحی مؤثر باشد. فاشیا نه تنها به عنوان بافت پوششی برای عضات عمل م یکند، بلکه در تنظیم تنش های عضلانی و الگوهای حرکتی نیز نقش حیاتی دارد.
تحقیقات نشان م ی دهند که تمرینات اصلاحی که با در نظر گرفتن ویژگیهای فاشیا طراحی شده اند، می توانند به بهبود وضعیت کیفوز کمک موثرتری کنند. فاشیا به عنوان یک شبکه ارتباطی بین عضات و استخوانها عمل کرده و به تنظیم و توزیع تنش ها در طول حرکات کمک می کند.
این ساختار به ویژه در تمرینات کششی و تقویتی که بر روی عضات پشتی و قفسه سینه تمرکز دارند، تأثیر بسزایی دارد.
به کارگیری رو شهای تمرینی که به فاشیا توجه دارند، می تواند به بهبود انعطاف پذیری و قدرت عضلانی کمک کند و در نتیجه، به کاهش انحنا یا مطلوب سازی قوسهای ستون فقرات و بهبود وضعیت بدنی بیماران و مراجعه کنندگان برای پیشگیری کمک نماید. عاوه بر این، این رویکرد می تواند به کاهش درد و افزایش کیفیت زندگی افراد مبتا به کیفوز منجر شود.
در نهایت، تحقیق و توسعه برنامه های تمرینی با در نظر گرفتن نقش فاشیا می تواند به متخصصان فیزیوتراپی برای پیشگیری و درمان و مربیان ورزشی برای بهبود عملکرد ورزشکاران کمک کند تا روشهای مؤثرتری را برای پیشگیری از کیفوز و درمان کیفوز ارائه دهند. این رویکرد نه تنها به بهبود وضعیت حرکتی بیماران کمک می کند، بلکه به ارتقا سامت عمومی و کیفیت زندگی آنها نیز می انجامد

The effect of diaphragmatic breathing exercise with biofeedback on respiratory function in incomplete cervical spinal cord injury: A randomized-controlled study

Soroush Hasnakipour[1], Zahra Mosallanezhad[2], Tahere Rezaeian[3], Farhad Azadi[4], Mehdi Noroozi[5]

1.PhD Candidate, PT, Department of Physical Therapy, University of Social Welfare and Rehabilitation Sciences, Tehran, Iran.

2.PhD, PT, Department of Physical Therapy, University of Social Welfare and Rehabilitation Sciences, Tehran, Iran.

3.PhD, PT, Department of Physical Therapy, Faculty of Allied Medicine, Kerman University of Medical Sciences, Kerman, Iran.

4.PhD, PT, Department of Psychiatry Z Research Center of Substance Abuse and Dependence, University of Social Welfare and Rehabilitation Sciences, Tehran, Iran.

5.PhD, Department of Ergonomics, University of Social Welfare and Rehabilitation Sciences, Tehran, Iran.

Abstract:

Objectives: The aim of this study was to investigate the effect of diaphragmatic breathing exercise with biofeedback on respiratory function in incomplete cervical spinal cord injury (SCI) patients.

Design: Forty SCI patients (mean age: 32.675.08± years) were randomly entered into two groups including the control group (n=20) and the intervention group (n=20). Forced Expiratory Volume in 1 second (FEV1), Functional Vital Capacity (FVC), Maximum Voluntary Ventilation (MVV) tests were performed to measure pulmonary function and Nijmegen Questionnaire (NQ) was used to evaluate severity of respiratory dysfunction before, immediately after intervention, and one month after the intervention.

Results: The mean of pulmonary function tests in the intervention group was increased after the intervention ($p < 0.001$) and at one-month after intervention ($p < 0.001$). In addition, the control group indicated no change in these variables. The NQ score also decreased significantly in both groups (control group= $p < 0.001$, intervention group=, $p<0.001$). The change of NQ score significantly differed between the groups ($F=4.67$, $p=0.03$); also, significant difference was observed after intervention ($p<0.001$) and one month follow-up ($p<0.001$).

Conclusion: The application of visual biofeedback during breathing exercise can improve pulmonary function and mechanism may make the NQ improve as a reflection of lowered dyspnea.

Keywords: Spinal Cord Injury, Biofeedback, Pulmonary Function Test, Spirometry.

Differences in symmetry of pelvic and lower limb joints kinematics between subjects with and without low back pain during gait motion

Fatemeh Ghasemi dehcheshmeh[1], Atefeh Rahimi[2], Amir Massoud Arab[3]

1. Department of Physiotherapy, School of Allied Medical Sciences, Shahrekord University of Medical Sciences, Shahrekord, Iran
2. Musculoskeletal Research Center, department of physiotherapy and school of rehabilitation sciences, Isfshan university of medical sciences, Isfahan, Iran
3. Department of physical therapy, university of Social Welfare and Rehabilitation Sciences, Tehran, Iran Department of Physiotherapy, School of Allied Medical Sciences, Shahrekord University of Medical Sciences, Shahrekord, Iran

Department of Physical therapy, University of Social Welfare and Rehabilitation Sciences, Tehran, Iran

Musculoskeletal Research Center, Department of Physiotherapy and School of Rehabilitation Sciences, Isfahan University of Medical Sciences, Isfahan, Iran

ABSTRACT

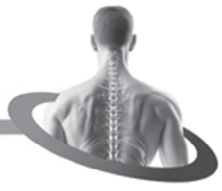
Introduction: Although literature in relation to gait function in low-back-pain (LBP) subjects is extensive, there is limited information on symmetry of range of motion (ROM) between lower extremities of both side in these patients. Since some literature displayed asymmetric movement pattern is associated with the onset of symptoms in CLBP subjects, it is important to evaluate the degree of movement asymmetry in the lower limb jointsin healthy people and low back pain during walking. The aim of the current research is to quantify Pelvic and lower limb joints symmetry indices (SI) of joint ROM variable between the non-dominant (ND) and dominant (D) sides of the body in non-specific low-back-pain compared to healthy subjects during walking.

Method: Participants included 20 individuals with chronic LBP (group I) and 20 healthy subjects (group II). Pelvic and lower limb kinematics was tracked using a seven-camera motion capture system. In this study, ROM variables, bilateral pelvic and lower limb kinematic variables were measured during 5 walking trial at a distance of 7 meters, to make comparisons between groups. Kinematic variables included: Pelvic, Hip, Ankle, Knee ROM in sagittal, frontal and transvers plan.

Results: Although the symmetry index was not different between groups in most comparisons but the ROM Asymmetry Index (ASI) of the knee joint in the sagittal plane was significantly different between group I (AsI: 0.057) and group II (AsI: 0.031), (p=.024). There was also a significant difference between group I and group II in the ASI of pelvic movements

in frontal (group I (AsI :0.377) , group II (AsI: 0.332), (p=.000)) and transverse (group I (AsI :0.176) , group II (AsI: 0.667), (p=.000)) plane.

Discussion: In CLBP subjects, there is a change in the motor control of the lumbar region, which is associated with pelvic and lower extremity motor control disorders. Perhaps the differences in ASI can be attributed to these changes. It can be said, due to the proximity of 81 the pelvic region to the lumbar region, low back pain may have led to differences in ASI in pelvic movements in the frontal and transvers planes and since the joints of the lower limbs are chained together, the knee joint to compensate asymmetry and reduced movement of the center of gravity while walking has changed the amount of movement asymmetry in the sagittal plane.Clinicians need to consider differences in symmetry patterns when developing rehabilitation strategies for LBP patients.



Reliability of Elastography Measures in Individuals with and without Neck and Low Back Pain

Soodeh Zandi1,2; Zahra Mosallanezhad1,2,3; Hadi Karimi Mobin4; Hamid Reza Mokhtarinia5; Mehdi Noroozi4; Farhad Azadi1,2; Amir Massoud Arab1,2

1.PhD, PT, Neuromusculoskeletal Rehabilitation Research Center 2.Department of Physical Therapy, University of Social Welfare and Rehabilitation Sciences, Tehran, IRAN
3.Clinical Research Development Center, Rofeideh Rehabilitation Hospital, University of Social Welfare and Rehabilitation Sciences, Tehran, Iran.
4.MD, Radiology Specialist, Radiology department, Army University of Medical Sciences, Tehran, Iran.
5.PhD, PT, Department of Ergonomics, University of Social Welfare and Rehabilitation Sciences, Tehran, Iran.PhD, Epidemiologist, Department of Psychiatry, and Substance Abuse and Dependence research center, University of Social Welfare and Rehabilitation Sciences, Tehran, Iran.

Purpose: This study aimed to evaluate the test retest reliability of sonoelastography measurements, specifically using Shear Wave Elastography (SWE), in individuals with and without neck and low back pain (LBP).

Methods: Thirty participants, comprising 15 individuals with non-specific neck and low back pain (LBP) and 15 healthy subjects, were enrolled in this study. The fascia elasticity, thickness, and ratio of fascia elasticity to the elasticity of subcutaneous fat, were measured in two sites of the lumbar and cervical regions, twice by a single expert examiner with an interval of 1-3 days. Reliability of ultrasound examination and image interpretation were calculated using the Intraclass Correlation Coefficient (ICC3,1), Standard Error of Measurement (SEM), Minimal Detectable Change (MDC), as well as limits of agreement by Bland-Altman plots. Independent t-tests was used to compare the two groups differences.

Results: Results revealed that the test-retest reliability for elasticity measurements in both cervical and lumbar regions across both groups was excellent, with ICC(3,1) values ≥ 0.90. Fascia thickness and the fascia elasticity-to-subcutaneous fat elasticity ratio also demonstrated good toexcellent reliability, with ICC(3,1) values ≥ 0.80.The SEM, MDC, and Limits of Agreement (LOA) validated these findings respectively. The patients showed significantly thicker lumbar fascia than healthy subjects ($p<0.05$), but no significant difference was found about the elasticity measure.

Conclusion: The test retest reliability of SWE measures for assessing fascia properties was high in individuals with and without neck and LBP. The SWE may be used as a reliable method to evaluate fascial alterations.

Keywords: Shear Wave Elastography, Low back pain, Neck pain, Fascia properties,Elasticity, Reliability

Three-dimensional motion analysis of sacroiliac joint mobility: a reliability study

Ahmad Bahramian Parchekouhi1, Noureddin Karimi2, Mohammad yousefi3, Farhad Tabatabai Ghomsheh4, Leila Rahnama5

1.PT, PhD From University of Social Welfare and Rehabilitation Sciences, Tehran, Iran
2.PT, PhD Department of Physiotherapy, University of Social Welfare and Rehabilitation Sciences, ehran, Iran
3.Sport Biomechanics, Faculty of Sport Sciences, University of Birjand Clinical Gait analysis laboratory, Department of Physiotherapy, School of Rehabilitation, Shahid Beheshti University of Medical Sciences, Tehran, Iran
4.Professor, Ergonomics Department, Pediatric Neurorehabilitation Research, University of Social Welfare and Rehabilitation Sciences, Tehran, Iran
5.PT, PhD School of Kinesiology, California State University, Los Angeles, CA, USA

Background: Sacroiliac joint movement has been investigated in many studies using a motion analysis system, but the reliability of this method is not well defined.

Objective: So, the aim of this study is to investigate the reliability of measuring the three-dimensional (3D) movement of the SIJ through the motion analysis system.

Methods: Ten healthy participant performed three forward flexion from standing position, twice in one session with an interval of 30 minutes. The movements were captured by VICON motion analysis system and the motion of the sacrum relative to each innominate estimated in three plans of movement. The test-retest reliability was calculated with the average of three trails using the intraclass correlation coefficient (ICC) with 95% confidence interval (CI).

Results: The measurements demonstrated a good to excellent reliability (ICC from .61 to .97) were achieved for the SIJ motion variables.

Conclusion: The outcomes of this study showed that the 3D motion analysis can be used for the evaluation of SIJ mobility due to its acceptable reliability.

Key words: Sacroiliac joint, 3D motion analysis, Reliability, forward flexion test

The Necessity of Clinical Laboratories in Physical Therapy: A New Perspective on Addressing social and Professional Needs

Majid Shahbazi[1]*, Tayyebeh Sadat Fatemi[2]
1. Assistant Professor, Department of Physiotherapy, School of Paramedical and Rehabilitation Sciences, Mashhad University of Medical Sciences, Mashhad, Iran.
2. BSc, Department of Physiotherapy, Imam Reza Hospital, Mashhad University of Medical Sciences, Mashhad, Iran.

Abstract

Diagnosis is a process that is not exclusive to any single profession. Physiotherapists, as part of the healthcare system involved in the treatment of disorders, particularly musculoskeletal conditions, require relevant professional diagnoses to select appropriate therapeutic techniques. The role of a physical therapist has evolved from being a technician following prescribed instructions to becoming an autonomous healthcare professional, equipped with solid scientific knowledge and grounded in evidence-based practice. The purpose of Physical Therapy Diagnosis (PTD), also known as Functional Diagnosis (FD), is to identify impairments in the movement system. The absence of standardized diagnostic protocols within physiotherapy has led to variability in practice and, at times, conflicting evidence regarding the efficacy of treatments. This inconsistency underscores the need for establishing clinical physiotherapy laboratories dedicated to generating quantitative data that can support accurate diagnosis and effective treatment planning. Also, the development of specialized laboratory fields in physiotherapy is crucial for enhancing service quality, advancing scientific knowledge, and meeting societal needs. Establishing these programs will enhance patient care and advance physical therapy practices. However, achieving these visions will require careful planning, collaboration, and a commitment to ongoing professional development.

Keywords: Physical Therapy Specialty, Diagnostic Technics and Procedures, Clinical Laboratory, Evidence-Based Practice, Movement Disorders

The 2nd International and
25th National Seminar in
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Poster Presentations

Regional and Temporal Trends in the Prevalence of Musculoskeletal Disorders in the Iranian Elderly Population: Results from the Global Burden of Disease Study, 1990 to 2019

Fateme Shakeri Shamsi[1], Moslem Taheri Soodejani[2]
1.Center for Healthcare Data Modeling, Departments of Biostatistics and Epidemiology, School of Public Health, Shahid Sadoughi University of Medical Sciences, Yazd, Iran.
2.Elderly Health Research Center, School of Public Health, Shahid Sadoughi University of Medical Sciences, Yazd, Iran

Abstract:

Objectives: This study aims to estimate regional and temporal trends in the prevalence of musculoskeletal disorders (MSDs) in the Iranian elderly population.

Methods: This ecological study utilized data from the Global Burden of Disease (GBD) dataset to report the prevalence of MSDs in the Iranian elderly population (60 to 89 years old) from 1990 to 2019. Analyses involved regional and temporal trends using Joinpoint regression and the prevalence in 2019 using ArcGIS.

Results: The trend analysis from 1990 to 2019 showed the six-time segment in which the highest annual percent change (APC) of prevalence for MSDs was reported in males (1990 to 1996: 0.392; [95% UI:0.376, 0.413]), females (1996-1999 :1.512; [95% UI:1.423, 1.597]), and both sexes (1996-1999: 0.814; [95% UI: 0.755, 0.858]) whole population. Also, the regional analysis showed that the highest average annual percent change (AAPC) of prevalence for MSDs was, in males (0.322; [95% UI: 0.301, 0.343]), in females (0.333; [95% UI: 0.320, 0.346]), and both sexes (0.341; [95% UI: 0.331, 0.352]) in Kohgiluyeh and Boyer Ahmad provinces. Finally, the highest prevalence of MSDs in 2019 was found in males (46377 to 51228 per 100000), females (54342 to 62845 per 100000), and both sexes (50410 to 54966 per 100000) in Ardabil, Alborz, Tehran, and South Khorasan provinces.

Conclusion: This study shows an increasing trend of the prevalence and relatively high prevalence of MSDs among the Iranian elderly in some provinces. These findings highlight the need for effective health policies that promote elderly health.

Keywords: Musculoskeletal diseases, aged, chronic disease, epidemiology, Iran

The association between craniovertebral angle and neck muscle size using ultrasonography: A systematic review

Fatemeh Binaei[1], Nahid Rahmani[2], Mohammad Ali Mohseni Bandpei[3]
1. Neuromusculoskeletal Rehabilitation Research Center, University of Social Welfare and Rehabilitation Sciences, Tehran, Iran.
2.Assistant Professor, Ph.D., PT. Pediatric neurorehabilitation research center, Physiotherapy department, university of social welfare and rehabilitation sciences, Tehran, Iran.
3.Professor, Ph.D., PT. Neuromusculoskeletal Rehabilitation Research Center, University of Social Welfare and Rehabilitation Sciences, Tehran, Iran

Abstract

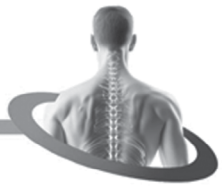
Background and aims: Using ultrasonography to systematically review all published studies that investigated the association between craniovertebral angle and neck muscle size.

Methods: This systematic review followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. Searches were performed in PubMed, Science Direct, OVID, MEDLINE, and Google Scholar databases from January 2000 to October 2024. The keywords used were: "Forward head posture", "Cranial vertebral angle", "size", "thickness", "weakness", "enlargement", "hypertrophy", "ultrasonography*", "Diagnostic ultrasound", "ultrasonic imaging", "imaging", "medical sonography", and "ultrasonic diagnostic".

Results: Of the 329 articles retrieved from the databases, 10 studies fulfilled the inclusion criteria. Four studies investigated the size of neck flexor muscles, four articles investigated the size of neck extensor muscles, and two articles focused on the size of both neck flexor and extensor muscles. Six studies compared participants with and without forward head posture. Two studies were conducted among asymptomatic subjects, while the other two studies were conducted among participants with and without neck pain.

Conclusion: The reviewed studies demonstrated that changes in the craniovertebral angle are associated with alterations in neck muscle size, particularly affecting the sternocleidomastoid and semispinalis capitis muscles. However, additional research is necessary to investigate the functional implications of these alterations in muscle characteristics and to develop targeted interventions for individuals with forward head posture.

Keywords: Neck muscles, Thickness, ultrasonography, cranial, vertebrae.



The association between low back pain and lifestyle factors in adolescents

Fatemeh Binaei[1], Nahid Rahmani[2], Mohammad Ali Mohseni Bandpei[3]
1. Neuromusculoskeletal Rehabilitation Research Center, University of Social Welfare and Rehabilitation Sciences, Tehran, Iran.
2. Assistant Professor, Ph.D., PT. Pediatric neurorehabilitation research center, Physiotherapy department, university of social welfare and rehabilitation sciences, Tehran, Iran.
3. Professor, Ph.D., PT. Neuromusculoskeletal Rehabilitation Research Center, University of Social Welfare and Rehabilitation Sciences, Tehran, Iran

ABSTRACT

Background and aims: Low back pain (LBP) is one of the most prevalent disorders associated with spinal dysfunction and may significantly influence the quality of life in adolescents. The present study aimed to investigate the correlation between LBP and factors related to lifestyle in adolescents.

Methods: Eighty children with a history of LBP and 160 healthy matched children participated. Demographic information, pain intensity, level of disability, and lifestyle factors questionnaires were assessed. The size of the abdominal muscles was measured using a sonography device.

Results: A significant correlation was found among gender, physical activities, duration of physical activity, and doing homework. A significant correlation was also observed between the two groups and the position of doing homework. There was a significant correlation between the size of the Transverse Abdominis muscle (TrA) and duration of physical activities in healthy subjects, as well as duration of doing homework in the patient group. A significant correlation was found between the size of the Internal Oblique muscle (IO) and duration of physical activities in healthy subjects, as well as duration of doing homework in both healthy and patient groups. Finally, a significant correlation was demonstrated between the size of the External Oblique muscle (EO) and duration of physical activities in healthy subjects, as well as duration of working with computer and doing homework in the patient group.

Conclusion: physical activity and bad posture for doing homework and watching TV were considered to be as the most important risk factors for occurring LBP in adolescents.

Keywords: lifestyle, adolescent, low back pain, physical activity, sonography

The Breath-Back Connection: A systematic review

A Mirtaleb[1], N Rahmani[2]
1.MSc student of physical therapy. Physiotherapy department, university of social welfare and rehabilitation sciences, Tehran, Iran
2.Assistant Professor, Ph.D., PT. Pediatric neurorehabilitation research center, Physiotherapy department, university of social welfare and rehabilitation sciences, Tehran, Iran.

Abstract

Background: One of the most common disorders affecting almost all groups of people is low back pain (LBP). The coactivity of the abdominal muscles and respiratory muscles was considered as an important factor to provide the lumbopelvic stability.

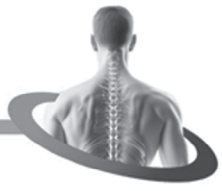
Objective: To systematically review the previous studies explored the connection between low back pain and respiration function in patients with LBP.

Study design: Systematic review

Methods: We searched available databases like PubMed, ProQuest, Science Direct, EMBASE, and MEDLINE from the beginning through the April 2024, comprehensively. All of the case control and cross-sectional studies that assessed the activity/thickness of abdominal muscles and lumbar multifidus muscles during breathing in LBP patients and healthy subjects with either ultrasonography (US) or electromyography (EMG) were included in our systematic review. To appraise the quality of the included studies Critical Appraisal Skills Program checklist used.

Results: Based on the initial search, 508 studies were found. After screening the titles, abstracts and bibliographies of connection 508 items 14 relevant articles remained to be reviewed.

Conclusion: Different diaphragm and abdominal muscles' function and thickness during breathing were reported in patients with LBP compared with healthy subjects. Concerning the lumbar multifidus muscles, no significant difference was recorded in subjects with LBP. Regardless of the abdominal muscle types, most studies showed lower abdominal muscles' thickness in LBP patients compared with healthy subjects. The small number and divergent findings highlighted the need for further research on this topic.



Altered ultrasonographic activity of multifidus and abdominal muscles during breathing in Karate athletes with and without nonspecific chronic low back pain

A Mirtaleb[1], N Rahmani[2], MA Mohseni Bandpei[3]
1.MSc., PT. Physiotherapy Department, University of Social Welfare and Rehabilitation Sciences, Tehran, Iran
2.Assistant Professor, Ph.D., PT. Neuromusculoskeletal Rehabilitation Research Center, University of Social Welfare and Rehabilitation Sciences, Tehran, Iran.
3.Professor, Ph.D., PT. Neuromusculoskeletal Rehabilitation Research Center, University of Social Welfare and Rehabilitation Sciences, Tehran, Iran

Abstract

Purpose: While many researchers have investigated on low back pain (LBP) and its association with the thickness of trunk muscles in the general population, few studied this association in athletes. This study aimed to investigate the altered ultrasonographic measurements of abdominal muscles and multifidus during breathing in karate athletes with and without chronic low back pain (CLBP).

Design: Cross-sectional study.

Introduction: CLBP is a common problem among karate athletes. According to the research, the activity of the back extensors, especially multifidus, and abdominal musculature vary among CLBP patients. These muscles seem to be responsible in maintaining the spinal stability. Furthermore, their activities are associated with respiration. The aim of this study was to investigate the altered ultrasonographic activity of abdominal muscles and lumbar multifidus during breathing in karate athletes with and without CLBP.

Methods: Through a cross-sectional study, 15 karate athletes with CLBP and 15 karate athletes without CLBP participated in the study. Muscle thickness change was measured by ultrasonography at the end-inspiration and end-expiration phases for the transverse abdominis (TrA), internal oblique (IO), external oblique (EO), and rectus abdominis (RA) and lumbar multifidus (LM) muscles. The breathing phases were monitored by the belt sensors around the participants' waist (Fig 1).

Results: A significant difference was shown in the average size of the EO muscle at the end of expiration between the healthy and CLBP groups ($p < 0.05$), so that the size of the EO muscle at the end of expiration was smaller in the athletes with CLBP than in the healthy group. The average size of the IO, TrA and LM muscles in the group of karate athletes with CLBP was lower

than the healthy group, but the differences were not statistically significant.
Conclusion: The results demonstrated that Karate athletes with CLBP had smaller EO muscles thickness at the end of expiration than the healthy group. However, further large-scale studies are needed to support the findings of the current study.
Keywords: Low back pain, Abdominal muscles, Multifidus, Ultrasonography, Respiration, Karate

reliability of Rehabilitative Musculoskeletal Sonography for Measuring the Visible Cross-Sectional Area of Suboccipital Muscle

Pezhman Masoudi, Noureddin Karimi, Iraj Abdollahi, Saeideh Moravej, Arash Tahamtan, Negar Akhavan

Abstract

Aims: The primary aim of this study is to assess the reliability of rehabilitative sonography as a non-invasive imaging technique for measuring the visible cross-sectional area (CSA) of the deep suboccipital muscles.

Objectives: Objectives involve determining both the intra-rater and inter-rater reliability of sonographic measurements to ensure consistent and reproducible results across different sessions and examiners. The ultimate goal is to validate rehabilitative sonography as a reliable tool for clinical and research applications in the assessment and management of musculoskeletal (MSK) conditions involving the deep suboccipital muscles.

Design and setting: Seventeen participants, including nine women and eight men without neck or vertebral pain, were evaluated using MSK sonography. The visible CSA of suboccipital muscles was assessed using real-time B-mode sonography in a sitting position with a linear probe (5 cm, 7.5 MHz) aligned perpendicularly to the muscle fibers of the rectus capitis posterior minor (RCPM) in one sonogram and the obliquus capitis inferior (OCI) and rectus capitis posterior major (RCPMJ) in another. Two experienced examiners performed sonography measurements, and the procedure was repeated one hour and again one day later.

Results: Intra-class correlation coefficient (ICC) values for Examiner 1 were 0.84 and 0.79 for RCPM, 0.84 and 0.71 for RCPMJ, and 0.86 and 0.77 for OCI at the one-hour and one-day repetitions, respectively. ICC values for Examiner 2 were 0.86 and 0.77 for RCPM, 0.77 and 0.86 for RCPMJ, and 0.61 and 0.64 for OCI at the one-hour and one-day repetitions, respectively. Inter-rater ICC values were 0.77 for RCPM, 0.82 for RCPMJ, and 0.68 for OCI.

Standard error of measurement (SEM) values for Examiner 1 were 11.63 and 13.92 mm^2 for RCPM, 10.30 and 7.91 mm^2 for RCPMJ, and 22.84 and 34.61 mm^2 for OCI. SEM values for Examiner 2 were 11.82 and 13.40 mm^2 for RCPM, 11.91 and 7.04 mm^2 for RCPMJ, and 39.20 and 37.73 mm^2 for OCI. SEM values between examiners were 13.74 mm^2 for RCPM, 10.36 mm^2 for RCPMJ, and 36.03 mm^2 for OCI.

Conclusions: These findings suggest that sonography is a reliable method for measuring the CSA of the RCPM, RCPMJ, and OCI muscles, provided that the examiners are well-trained and consistent in their techniques and that the average of three measurements is used.

Studying the effect of exercise therapy based on virtual reality on photogrammetric data, pain, disability, neck range of motion and balance in young subjects with forward head posture.

Yasaman Makoolati[1], Minoo Khalkhali Zavieh*[2], Khosro Khademi Kalantari[3] Alireza Akbarzadeh Baghban[4]
1.Sudent Research Committee, Department of Physiotherapy, School of Rehabilitation, Shahid Beheshti University of Medical Sciences, Tehran, Iran
2.Department of Physiotherapy, School of Rehabilitation, Shahid Beheshti University of Medical Sciences, Tehran, Iran
3.Department of Physiotherapy, School of Rehabilitation, Shahid Beheshti University of Medical Sciences, Tehran, Iran
4.Department of Biostatistics, Proteomics Research Center, School of Paramedicine, Shahid Beheshti University of Medical Sciences, Tehran, Iran.

Background and Aims: Forward head posture is one of the most common postural disorders. In this condition, the cervical arch is straightened, and as a result, the head is placed forward of the vertical line. Its prevalence in the community is 66%. The prevalence of this postural problem has increased with the expansion of the use of computers and mobile phones. Among the treatment methods, the most effective treatment is exercise therapy. The use of new methods, such as virtual reality, may help to increase the effectiveness of exercise therapy by creating motivation, increasing the number of repetitions, and increasing the duration of exercises. The aim of this study is to investigate the effect of virtual reality-based exercise therapy in people with forward head posture.

Materials and Methods: : In this interventional and clinical trial study, 50 young men and women aged 18-29 years with FHP were randomly divided into two groups. In the virtual reality group, subjects performed the chin tuck exercise in a game format using virtual reality glasses, and in the control group, subjects performed the same exercise at home without using virtual reality. The variables of craniovertebral angle, pain, neck disability index, range of motion, and balance were assessed before and after the intervention in each group. **Results:** The results showed that chin tuck exercise with and without the use of virtual reality both significantly improved the measured variables ($p<0.05$). And there was no significant difference between the two groups.

Conclusion: The present study showed that conventional exercise therapy and exercise therapy using virtual reality both improved craniovertebral angle, pain, disability, neck range of motion, and balance in young people with FHP.

Keywords: Exercise therapy, virtual reality, forward head posture

Exploring the abdominal muscle activation ratio following stabilization exercises in patients with low back pain: A systematic review

Fatemeh Shirzadi[1], Mohammad Ali Mohseni Bandpei[2], Nahid Rahmani, Iraj Abdollahi[3]

Abstract

Objective: To evaluate the abdominal muscle activation ratio during core stabilization exercises in individuals with and without low back pain (LBP).

Methods: The present systematic review was conducted according to the Preferred Reporting Items for Systematic Review and Meta-Analysis guidelines (PRISMA). Different databases including, PubMed, Scopus, Web of Science, Physiotherapy Evidence of Databases (PEDro), ProQuest and google scholar were searched from January 1990 to 2024. All studies evaluated the abdominal muscle activation ratio during different core stabilization exercises in people with and without low back pain were included. The keywords that used were: "ultrasonography", "diagnostic imaging", "muscle contraction", "abdominal muscle", "low back pain". Study selection and data extraction were performed by two reviewers.

Results: Nine articles were met the inclusion criteria of study. Of these nine identified articles, eight articles had good quality based on star-based Newcastle-Ottawa Scale (NOS scale). In five of the nine studies, the abdominal muscle activation ratio during core stabilization exercises was investigated in healthy subjects, all of these five studies reported that transverse abdominis (TrA) muscle had the highest muscle activation ratio among the abdominal muscles although this muscle had the least thickness of abdominal muscles. Four studies compared the abdominal muscle activation ratio during core stabilization exercises in subjects with and without LBP, which all showed that the muscle activation ratio of the TrA had the highest value among the abdominal muscles. Three studies reported that the abdominal muscle activation ratio in the two groups were similar, so that patients with LBP were able to activate the TrA muscle like healthy group.

Conclusion: The results showed that patients with LBP could activate abdominal muscle during core stabilization exercise in pain-free period similar to the healthy subjects.

Keywords: Ultrasonography, Muscle activation ratio, Core stabilization exercise, Low back pain, Systematic review

Comparative Analysis of High-Power Laser Therapy With and Without 1064 nm Wavelength in Spinal Discopathy Treatment

Vahdat Mohammadi, P.T

Abstract: High-power laser therapy is a well-established modality for reducing pain and improving functional abilities in patients. This study evaluates and compares the effectiveness of high-power laser therapy with and without the addition of a 1064 nm wavelength in treating spinal discopathy. The findings suggest that the inclusion of the 1064 nm wavelength enhances treatment outcomes by accelerating pain relief and functional recovery. These findings highlight the potential of the 1064 nm wavelength to optimize treatment efficiency and reduce the overall therapy duration.

Methods and Materials: Two groups of patients were included in the study following one week of partial rest and pharmacological therapy as prescribed by their respective specialists. Both groups underwent physiotherapy with high-power laser therapy using a gallium arsenide device with an average power output of 5-6 W/cm^2. The first group received laser therapy with wavelengths of 650 nm, 810 nm, and 910 nm, while the second group received an additional 1064 nm wavelength during treatment.

Treatment Results: Both groups demonstrated significant pain reduction and improved physical ability. However, the group treated with the additional 1064 nm wavelength experienced greater pain relief, faster recovery of physical ability, and required fewer treatment sessions compared to the other group.

Keywords: Discopathy, high-power laser therapy, 1064 nm wavelength, pain management, spinal rehabilitation

Measurement of Deep Neck Flexor Muscle Stiffness During Craniocervical Flexion Movement Under Functional Conditions in Individuals with Chronic Non-Specific Neck Pain Compared to Asymptomatic Controls

Ebrahim Ramezani[*1] PhD, Holakoo Mohsenifar[2] PhD, Mohammad Akbari[3] PhD, Reza Salehi[4] PhD, Fatemeh Riazy[5] MSc, Meysam Velayati[6] MD

1. Iranian Center of Excellence in Physiotherapy, Rehabilitation Research Center, Department of Physiotherapy, School of Rehabilitation Sciences, Iran University of Medical Sciences, Tehran, Iran
2. Department of Sport Injuries and Corrective Exercises, Faculty of Sport Sciences and Health, University of Tehran, Tehran, Iran
3. Department of Radiology, Akhtar Orthopedic Hospital, Shahid Beheshti University of Medical Sciences, Tehran, Iran

Purpose: The primary objective of the present study was to examine changes in the stiffness of the deep neck flexor (DNF) muscles, including the longus colli and longus capitis, during the craniocervical flexion (CCF) task under functional conditions in individuals suffering from chronic non-specific neck pain (CNSNP) compared to asymptomatic controls.
Methods: In the current cross-sectional study, 25 participants with CNSNP and 25 controls with matched age, height, and weight were recruited. The absolute and normalized DNF muscle stiffness to maximum voluntary isometric contraction (MVIC) during CCF movement was measured at supine resting, sitting resting, and seated CCF tasks using the specially designed chair. To assess neck muscle stiffness, ultrasound shear wave elastography was employed using a linear transducer (frequency bandwidth: SL10-2 MHz) oriented perpendicular to the DNF muscle fibers. Additionally, a reliable and valid single-point load cell was utilized to measure CCF force in the seated position.
Results: The findings revealed a significant main effect of condition on the absolute and normalized DNF muscle stiffness ($P = 0.001$), indicating an increase in muscle stiffness as the level of condition changed from supine resting to sitting contracted. There was no significant main effect of group on the absolute stiffness of the longus capitis muscle or the normalized stiffness of both DNF muscles ($p > 0.05$). However, participants with CNSNP demonstrated significantly lower absolute stiffness in the longus colli muscle compared to healthy controls ($P = 0.017$). Additionally, there was no significant group-by-condition interaction effect on either absolute or normalized DNF muscle stiffness ($P > 0.05$), suggesting that both groups exhibited similar patterns of stiffness changes.

Conclusions: As a contribution to clinical practice, the sitting position may be more effective for achieving higher DNF muscle stiffness, potentially leading to increased active stiffness during CCF compared to resting supine position. Normalizing stiffness to maximum force production during CCF for both DNF muscles does not provide strong discriminative between the CNSNP and asymptomatic groups. Therefore, further normalization methods should be explored to develop a reliable approach for measuring muscle stiffness.

Keywords: neck pain, muscle stiffness, shear wave elastography neck muscles, elastic modulus

Comparison of the effect of femoral nerve neuro-mobilization and dry needling technique of lumbar area on the pain, function, and range of motion in patients with patellofemoral pain syndrome

Tahereh Rezaeian[1*], Zahra Mosallanezhad[2]
1. PhD, PT, Assistant Professor, Department of Physical Therapy, Faculty of Allied Medicine, Kerman University of Medical Sciences, Kerman, Iran.
2. PhD, PT, Assistant Professor, Department of Physical Therapy, University of Social Welfare and Rehabilitation Sciences, Tehran, Iran.

Background: One of the most common knee problems is patellofemoral pain syndrome (PFPS). It is importance to pay attention to the muscles of the lumbar, hip, and knee area in patients with PFPS, especially to the presence of trigger points within the quadratus lumborum, iliopsoas, gluteus medius, and quadriceps. Hence, using therapeutic interventions to eliminate trigger points is required. Therefore, the present study aimed to compare the efficacy of femoral neuro-mobilization versus dry needling (DN) in patients with PFPS.
Method: 90 young non-athlete patients aged between 18 and 40 years old with diagnosis of PFPS were randomly divided into three groups of femoral nerve neuro-mobilization (n = 30), dry needling (n=30) and control (n = 30) through the simple and convenience sampling method. The experimental groups received interventions three times a week up to 6 sessions. Pain intensity, physical function, and knee flexion range of motion (ROM) of patients with PFPS were measured in three groups in three stages of before, immediately after and one month after performing the treatment sessions.
Results: The six-session physiotherapy treatment led to a significant reduction in pain intensity as well as an improvement in physical function and knee flexion ROM in both treatment groups ($p < 0.001$). The DN and neuro-mobilization groups demonstrated significant pain reductions, with large effect sizes (Cohen's d = 4.179 and 3.331, respectively) and clinically meaningful changes based on MCID values. The treatment groups showed similar improvements ($P > 0.999$), while the control group exhibited minimal changes over time. Also, the DN and neuro-mobilization groups demonstrated significant and clinically meaningful improvements in physical function scores, with large effect sizes (Cohen's $d > 5$). The both treatment groups had similar result ($P > 0.999$), but both were significantly better than the control group ($P < 0.001$). Finally, the effect size (Cohen's d) demonstrated large effects in knee flexion ROM for the DN group (d = 2.54) and neuro-mobilization group (d = 2.24). Time

comparisons indicated sustained improvements across all groups, with significant differences ($P < 0.001$) in knee flexion, the control group showed less improvement compared to the treatment groups. **Conclusion:** This study demonstrated that femoral neuro-mobilization and DN techniques significantly improved pain intensity, knee physical function, and knee flexion ROM in PFPS patients during rehabilitation. The intervention group exhibited superior improvements compared to the control group, highlighting the effectiveness of femoral neuro-mobilization and DN techniques. These findings suggest that these treatments can optimize recovery and improve rehabilitation outcomes in patients with PFPS.
Keywords: Patellofemoral Syndrome; Dry Needling; Femoral Nerve; Pain Intensity; Range of Motion.

Effectiveness of Kinesiotaping in Managing Lumbar Pain: A Comprehensive Review

Parsa Owliaee [1,2], Gholam Reza Hajvalie[3,*]
1.Student Research Committee, Hamadan University of Medical Sciences, Hamadan, Iran.
2.Physiotherapy Department, School of Rehabilitation Sciences, Hamadan University of Medical Sciences, Hamadan, Iran
3.Rehabilitation Research Center, Department of Physiotherapy, School of Rehabilitation Sciences, Iran University of Medical Sciences, Tehran, Iran

Objective: This review aims to evaluate the effectiveness of Kinesiotaping (KT) as a therapeutic intervention for managing lumbar pain, specifically focusing on its impact on pain reduction, functional disability, muscle endurance, and its potential as an adjunct to conventional physiotherapy.

Methods: A comprehensive review of randomized controlled trials (RCTs) and crossover studies examining the effects of KT in individuals with chronic and nonspecific low back pain (LBP) was conducted. Thirty-five studies were included, assessing various KT applications such as elastic therapeutic taping (ETT) and rigid therapeutic taping (RTT), compared to no-tape or sham-tape controls. Outcome measures included pain intensity (Visual Analogue Scale), disability (Oswestry Disability Index), muscle endurance (Biering-Sørensen test), and global perceived effect.

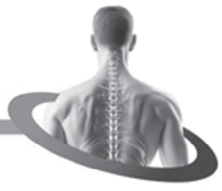
Results: The review included studies with diverse patient populations, including individuals with chronic nonspecific LBP, menstrual LBP, and acute back pain, as well as those receiving conventional physiotherapy. Several studies reported that KT, especially when applied to the lumbar region, led to significant reductions in pain and functional disability. In particular, the studies examining menstrual LBP in young females found substantial reductions in pain intensity (Visual Analogue Scale) and functional disability (Oswestry Disability Index) with KT application, with improvements noted as early as three days post-treatment.

Other studies, including those examining chronic nonspecific LBP, showed modest improvements in pain reduction, with the KT group demonstrating slightly better outcomes than no-tape conditions. However, the difference in pain intensity was small and often fell within the margin of measurement error, suggesting limited clinical significance. In some cases, KT did not provide any superior benefits compared to rigid therapeutic taping (RTT), with no substantial differences in pain intensity or disability between the two modalities.

KT was also found to have a modest effect on back muscle endurance (Biering-Sørensen test), showing slight improvements compared to no-tape conditions. However, this improvement did not surpass the threshold of measurement error and was not significant when compared to RTT. In certain studies, KT as an adjunct to conventional physiotherapy produced improvements in both pain intensity and disability, but these effects were generally small, indicating KT's potential role as a supplementary treatment rather than a primary intervention.

The studies also explored the long-term effects of KT, with some reporting lasting benefits at three and six months post-treatment, particularly in those who received KT alongside conventional physiotherapy. However, the variability in the duration of KT effects and the mixed outcomes across studies highlight the need for more standardized protocols and further investigation into KT's long-term efficacy.

Conclusion: Kinesiotaping may offer a modest benefit in managing lumbar pain, particularly when applied as part of a multi-modal treatment plan. However, the variability in results and the lack of consistent superiority over sham or rigid taping suggest that KT's clinical significance remains unclear. Further high-quality, large-scale trials are needed to establish the optimal application protocols and confirm KT's role in the treatment of LBP.



A Review of Application of High-intensity Laser Therapy for Chronic Low Back Pain: Efficacy and Clinical Implications

Parsa Owliaee[1], Mohammad Reza Asadi[2]
1.Student Research Committee, Hamadan University of Medical Sciences, Hamadan, Iran-Physiotherapy Department, School of Rehabilitation Sciences, Hamadan University of Medical Sciences, Hamadan, Iran
2.Department of Physical Therapy, School of Rehabilitation Sciences, Hamadan University of Medical Sciences, Hamadan, Iran

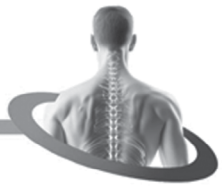
Introduction: Chronic low back pain (CLBP) remains a leading cause of disability globally, prompting the exploration of various therapeutic modalities, including high-intensity laser therapy (HILT). This review examines the current evidence on the efficacy of HILT in treating CLBP, synthesizing findings from multiple clinical trials and studies that evaluate its impact on pain, function, and quality of life.

Methods: A comprehensive review was conducted on 11 clinical trials investigating the application of HILT for CLBP, with a focus on pain relief, functional outcomes, and long-term benefits. Studies included various methodologies, such as randomized controlled trials, prospective studies, and comparative trials against other treatments like ultrasound therapy, transcutaneous electrical nerve stimulation (TENS), and exercise therapy. Common assessment tools across the studies included the Visual Analog Scale (VAS) for pain intensity, the Oswestry Disability Index (ODI), and the Roland-Morris Disability Questionnaire (RDQ).

Results: HILT consistently demonstrated significant improvements in pain reduction and functional disability in patients with CLBP across all studies. Laser therapy, typically delivered at wavelengths such as 1064 nm, was associated with greater short-term pain relief compared to other therapies like ultrasound and TENS. Furthermore, several studies indicated that HILT's benefits extended beyond the treatment period, with some reporting sustained effects up to one year post-treatment. Notably, studies combining HILT with exercise regimens showed enhanced outcomes in pain relief and functional improvement, especially for lumbar spine mobility. While HILT was effective in alleviating pain and improving mobility, it did not show consistent superiority over other treatments in terms of long-term functional recovery and quality of life in some trials. To achieve optimal results, HILT should be applied according to a standardized protocol. The most commonly used laser wavelength is 1064 nm, with energy doses typically ranging from 20 to 60 J/cm^2 per treatment area, depending on the device specifications. The laser is usually applied directly to the skin over the affected area, typically for 5-10 minutes per session. It is important to apply the laser in a grid-like pattern to cover

the painful region, ensuring even distribution of energy. For CLBP, treatment can be focused on the lumbar spine and surrounding soft tissues. The number of sessions can vary, but typical protocols suggest 10-20 sessions over 2-4 weeks. The treatment should be applied under the supervision of trained physiotherapists to ensure safety and effectiveness, especially when combined with other rehabilitation interventions like exercises or manual therapy.

Conclusion: The evidence supports the effectiveness of HILT as a promising therapeutic approach for CLBP, particularly in the short to medium term. It offers superior pain relief and functional improvements compared to placebo treatments and other modalities like ultrasound therapy and TENS. However, while the combination of HILT with exercise demonstrates enhanced outcomes, further investigation is needed to better understand the long-term effects and underlying mechanisms of HILT in the management of chronic musculoskeletal pain. Clinicians should consider HILT as a viable adjunct in CLBP management, with the potential for sustained therapeutic benefits.



Comprehensive movement system model for prevention and treatment of low back pain

Dr; Meissam Sadeghisani[1]
1.Assistant professor of physiotherapy, Shahrekord University of Medical Sciences, Department of physiotherapy, Iran

Low back pain (LBP) is a worldwide challenging musculoskeletal disorder among non communicable diseases. This condition with its side effect on personal and society has a larg impact on individual and governments. Therefore, numerus researchers and authors have attempt to discover a model for prevention and management of LBP.

Based on documents, LBP is the most prevalent musculoskeletal disorder and a common noncommunicable disease among Iranian people and societies. So, this condition also has a heavy burden on Iranian health system.

Regardlees of impairements and economic burden associated with LBP, its disability, specially when its become chronic, has a dramatic direct and indirect negative effect on the country.

Designing and developing a model which includes priority demand of the country is a necessary step in engaging in prevention or management of the disease. We need a flexible comprehensive model which includes bio-psychosocial-life style related risk factors. So, we will propose a new model of assessment, diagnosis and treatment of LBPs.

شش نکته کلیدی و مغفول در فیزیوتراپی گردن درد غیراختصاصی مزمن

دکترحسن شاکری
دکتری تخصصی فیزیوتراپی، دانشگاه علوم توانبخشی و سلامت اجتماعی

گردن درد غیر اختصاصی مزمن مشکل شایعی است که حجم عظیمی از مراجعه کنندگان به مراکز فیزیوتراپی را تشکیل میدهد. بروز این عارضه سالانه ۸۰ مورد از هر ۱۰۰۰۰ نفر جمعیت است. اخیرا بخاطر استفاده از گوشی‌های همراه تلفن، بروز و شیوع آن افزایش هم داشته است.
این عارضه یکی از دلایل شایع برای ارجاع مبتلایان به مراکز فیزیوتراپی است و با رعایت چند نکته ساده بخوبی با تمرین و فیزیوتراپی میتوان به آن غلبه کرد. در این مقاله به ۶ نکته کلیدی از حیث تمرین و فیزیوتراپی این عارضه اشاره شده است:
تمرین کشش عضلانی: فرد مبتلا در حالت نشسته یا ایستاده به آرامی سرش را به طرفین خم کند و گوش را به طرف شانه ببرد. نکته این تمرین ساده ۲۰ ثانیه نگهداشتن وضعیت و ۵ بار تکرار به هر طرف
تمرین ایزومتریک عضلات گردن: در حالت نشسته یا ایستاده کنار دیوار یک توپ پیلاتس ۲۵ سانتی یا بالش بین سر و دیوار قرار دهد و در چهار جهت جلو، عقب، و طرفین، فشار ۵ یا ۱۰ ثانیه ای به توپ وارد کند و ۱۰بار تکرار کند
ورزش غبغب گرفتن :درحالت نشسته یاایستاده در کنار دیوار، پشت سر را به دیوار تکیه دهد و چانه را به عقب کشیده و یک غبغب برجسته درست کند، زمان نکه داشتن ۵ تا ۱۰ ثانیه و تکرار ۱۰ بار
شانه و کتف ها را از عقب به هم فشار دهد ، و عضلات بالای ستون فقرات پشتی را تقویت کند، زمان نکه داشتن انقباض ۵ تا ۱۰ ثانیه و تکرار ۱۰ بار
چرخش سر و گردن به طرفین هم ۱۰ بار و هر بار با زمان ۵ تا ۱۰ ثانیه ای انجام شود. این کار به افزایش انعطاف و کاهش اسپاسم عضلات گردن کمک میکند
تمرین حات گربه- شتر، درحالت ۴ دست و پا، شاید در ظاهر به گردن تامربوط بنظر برسد و لی باید بدانیم انعطاف قسمت‌های دیگر ستون فقرات برای کارکرد بهتر عضلات گردن ضروری است، برای این کار در حالت ۴ دست و پا یک بار کمر را گود میکند و یک بار برجسته و هر بار ۵ تا ۱۰ ثانیه وضعیت را نگه میدارد
نکات مهم بعدی گرم یا سرد کردن عضلات گردن و کتف است(هات پک یا آیس پک هر دو موثرند، بنا به پذیرش بیمار)، که قبل از تمرینات باید انجام شود تا درد و اسپاسم کاهش یابد، نرمش‌های عمومی کل بدن باید به بیمارگردن دردی سفارش شود و ارگونومی صحیح این که گوشی و لپ تاپ در راستای چشم باشد و سر را زیاد خم نکند و از همه مهمتر آبرسانی بدن است که بیمار مقادیر زیادی آب بنوشد و عضلات برای کارکرد بهتر نیاز به محیط پرآب دارند.

Comparative Effectiveness of Therapeutic Exercise Combined with Shockwave Therapy vs. Mobilization with Movement in Athletes with Chronic Supraspinatus Tendonitis

Saeid mozayan taromsari
Department of Physiotherapy, University of Tehran medical sciences , Tehran, Iran

Abstract

This clinical trial investigated the comparative effectiveness of therapeutic exercise combined with shockwave therapy (SW) versus therapeutic exercise combined with Mobilization with Movement (MWM) in athletes with chronic supraspinatus tendonitis. Thirty-two athletes were randomly assigned to one of two treatment groups: therapeutic exercise + shockwave therapy or therapeutic exercise + MWM. Both groups received 12 sessions of therapeutic exercise over four weeks, while shockwave and MWM treatments were applied once a week for four sessions. Outcome measures included primary outcomes (pain and pressure pain threshold) and secondary outcomes (shoulder range of motion, supraspinatus muscle strength, and quality of life). Results showed significant improvements in pain reduction and functional outcomes in both groups, with the combination of therapeutic exercise and shockwave therapy demonstrating superior results in terms of pain reduction and pressure pain threshold compared to therapeutic exercise and MWM.

The Role of High-Frequency Electrical Stimulation in Inhibiting Synkinesis and Enhancing Recovery in Bell's Palsy

Saeid mozayan taromsari
Department of Physiotherapy, University of Tehran medical sciences , Tehran, Iran

Abstract

Bell's palsy is a common neurological disorder that results in unilateral facial paralysis due to inflammation of the facial nerve. While many patients recover spontaneously, a significant number experience the development of synkinesis, where involuntary muscle contractions occur during voluntary movements. High-frequency electrical stimulation (HFES), particularly through techniques such as **interferential current (IFC)**, has shown promise in improving recovery and reducing synkinesis in Bell's palsy patients. This article examines the neurophysiological mechanisms underlying HFES and presents a comprehensive review of its effectiveness in clinical practice.

مقایسه روش‌های تصویربرداری پزشکی در تشخیص ناهنجاری‌های ستون فقرات: مروری بر مزایا و محدودیت ها

نوید شهرکی
کارشناس رادیولوژی

مقدمه و هدف: ستون فقرات به عنوان ساختاری پیچیده، مستعد آسیبهای مکانیکی، دژنراتیو، و تومورال است. تشخیص دقیق این ناهنجاریها نیازمند روشهای تصویربرداری پیشرفته است. اگرچه رادیوگرافی ساده نخستین گام در ارزیابی است، اما محدودیتهای آن در نمایش بافت نرم و ساختارهای عصبی، استفاده از سی تی اسکن و MRI را ضروری میسازد. هدف از این مطالعه مقایسه روشهای تصویربرداری پزشکی در تشخیص ناهنجاریهای ستون فقرات و انتخاب بهترین روش تصویربرداری برای اهداف مشخص است.

روش کار: این مطالعه مروری بر پایه تحلیل دادههای حاصل از متاآنالیزها (۲۰۲۰-۲۰۲۳) و راهنماهای انجمن رادیولوژی آمریکا (ACR) و اروپا (ESR) انجام شد. معیارهای ارزیابی شامل وضوح تصویر، Sensitivity، Specificity، زمان اسکن، هزینه، و پرتودهی بود.

یافته ها: مزایای رادیوگرافی شامل هزینه پایین و پروسه سریع آن است و محدودیت‌های آن شامل دقت پایین در تشخیص اختلالات بافت نرم و عدم تشخیص فتق دیسک است. از رادیوگرافی در موارد غربالگری اولیه برای تشخیص شکستگی ها استفاده میشود. استخوان در تصاویر حاصل از سی تی اسکن از وضوح نسبتا بالایی (<۱mm) برخوردار است، اگر چه سی تی اسکن محدودیت هایی در نمایش بافت نرم دارد ولی تشخیص سریع خونریزی ، پرتودهی نسبی (۳-۵ mSv)، تشخیص شکستگیهای پیچیده، استئوفیتها و ارزیابی فوریتهای نخاعی از مزایای این روش تشخیصی محسوب میشود. از میان روش‌های تصویربرداری مورد مطالعه MRI بهترین وضوح بافت نرم (T۱/ weighted-T۲)و همچنین عدم پرتودهی و توانایی بالا در تشخیص فتق دیسک، تومورهای نخاعی و التهاب اعصاب را دارا است. با این حال زمان طولانی اسکن (۳۰-۶۰ دقیقه)، هزینه بالا، ممنوعیت در تصویربرداری بیماران با ایمپلنتهای فلزی جزو محدودیت‌های این روش تشخیصی به حساب می آید. PET-CT در ارزیابی متابولیسم تومورهای متاستاتیک یا التهابی پیشرفته کاربرد دارد. پرتودهی بالا (۲۵ mSv) و هزینه بسیار بالا از محدودیت‌های این روش تشخیصی به حساب می آید.

نتیجه گیری: به طور کلی انتخاب روش تصویربرداری به نوع آسیب و شرایط بیمار وابسته است. در بین روش‌های مورد مطالعه MRI برتری در تشخیص فتق دیسک (حساسیت ۹۷٪) و تومورهای نخاعی (دقت ۹۸٪) به دلیل کنتراست بالا بین بافت نرم و مایع مغزی-نخاعی را دارا است و به عنوان استاندارد طلایی برای اکثر ناهنجاری ها به ویژه بافت نرم و عصبی شناخته می شود. سی

تی اسکن در تشخیص شکستگی‌های فشاری (دقت ۹۴٪) و استئوآرتریت شدید مفید است و به طور کلی برای موارد اورژانسی (شکستگی ها) ، مواردی با محدودیت زمانی و یا بیمارانی با ممنوعیت در انجام MRI کاربرد دارد. رادیوگرافی تنها برای رد شکستگی‌های آشکار یا بررسی انحنای ستون فقرات مفید است. تکنیکهای نوینTesla ۷ MRI وضوح فوق العاده (۰.۵mm) دارد اما دسترسی به آن محدود و هزینه براست. با این حال ادغام روش ها مانند سی تی اسکن و MRI در موارد پیچیده توصیه میشود.

Muscular Imbalance and Its Role in Low Back Pain

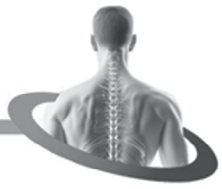
Seyede Solmaz Seyedi
MSC student of physiotherapy. University of Social Welfare and Rehabilitation Sciences, Tehran, Iran

Introduction and aim: Low back pain (LBP) is one of the most common musculoskeletal issues affecting people worldwide. many factors contribute to LBP, muscular imbalance is an important one. When certain muscles become overly tight and dominant while their opposing muscles weaken, the body compensates with poor posture and inefficient movement patterns. Over time, these imbalances place excessive stress on the lower back, leading to pain and even long-term spinal conditions. This article explores how muscular imbalances contribute to LBP.
Methods: relevant key words (muscular imbalance, low back pain and physical therapy) were used to search in different databases including PubMed, Cochrane library and Scopus.
Results: Muscular imbalance affect the core, hips, and lower back, they create excessive strain on the spine, increasing the risk of chronic pain, and spinal disorders. The core muscles are responsible for stabilizing the spine during movement. A weak core fails to provide proper support, forcing the lower back muscles to overcompensate, leading to tightness, fatigue, and pain. Weakness of Transverse Abdominis reduces spinal stability, leading to excessive movement and pain. Erector Spinae tighten excessively when the core is weak, resulting in chronic stiffness and discomfort. Poor Obliques abdominis strength can cause imbalanced rotation and trunk instability, leading to stress on the lower back. Lower Crossed Syndrome is a common postural imbalance where hip flexors and lower back muscles become tight and overactive, while glutes and abdominals become weak and underactive. This imbalance alters pelvic alignment, placing increased stress on the lumbar spine. The posterior chain consists of the glutes, hamstrings, and spinal erectors, which work together to maintain posture and support movement. When these muscles are weak, the lower back is forced to compensate, increasing strain and pain. Upper Crossed Syndrome primarily affects the neck, shoulders, and upper back, but it also has a major impact on the lower back. Poor upper body posture shifts weight distribution, increasing spinal curvature and excessive lumbar strain. Unequal strength between the left and right sides of the body can lead to pelvic misalignment, causing uneven weight distribution on the lumbar spine.
Conclusion: Muscular imbalances are a leading cause of chronic LBP, primarily due to core weakness, tight muscles, poor posture, and asymmetrical movement patterns
key words: muscular imbalance, low back pain, physical therapy and muscle stabilization

ازگشت به شغل و Work Hardening در بیماران مبتلا به LBPمزمن

امیررضا داودی
دانشجو کارشناسی ارشد کاردرمانی، گروه آموزشی کاردرمانی، دانشگاه علوم توانبخشی و سلامت اجتماعی، تهران، ایران

درد پایین کمر (LBP) یکی از علل شایع ناتوانی و یکی از پرهزینهترین شرایط بهداشتی به شمار میآید. همچنین، LBP میتواند به کاهش بهرهوری و افزایش غیبت از کار منجر شود و یکی از علل اصلی از دست دادن زمان کاری محسوب میشود. به جای آنکه بازگشت به کار به عنوان یک رویداد مجزا در نظر گرفته شود، این فرآیند باید به عنوان یک مسیر در نظر گرفته شود که شامل مجموعهای از رویدادها، انتقالها و مراحل است و تعاملات با دیگر افراد و محیط را در بر میگیرد. فرآیند بازگشت به کار (RTW) به عنوان مسیری تصور میشود که کارگران از آن عبور میکنند تا به هدف خود در بازگشت به کار دست یابند، که معمولاً به معنای بازگشت به مشارکت کاری پیش از ناتوانی است. این فرآیند از زمان آغاز ناتوانی کاری شروع میشود و زمانی به پایان میرسد که یک نتیجه بلندمدت رضایتبخش حاصل گردد.
یافتههای مطالعاتی نشان میدهد که عواملی از قبیل انتظارات و باورهای بهبودی، تعاملات با ارائهدهندگان خدمات بهداشتی، درد و محدودیتهای عملکردی، وجود radiating painبه عنوان نشانهای از آسیب و عوامل مرتبط با شغل نظیر Demandهای فیزیکی شغل و رضایت شغلی بر بازگشت به کار (RTW) در افراد مبتلا به LBP تأثیر دارند



روش‌های اندازه گیری کیفیت عضلات در تصویربرداری پزشکی

پیام غفوری روزبهانی
دانشجوی دکترای تخصصی فیزیوتراپی

چکیده
کمیت عضلانی (توده عضلانی) و کیفیت عضله (مقدار بافت غیرانقباضی) قدرت آن را تعیین می کند . این دو عامل به طور مستقل در ایجاد قدرت عضلانی مشارکت می کنند. ظرفیت تولید تنشن عضله ممکن است علیرغم عدم تغییر در اندازه عضله، کاهش یابد. این موضوع اهمیت کیفیت عضله را در عملکرد عضلات برجسته می کند. شدت اکو (EI)[۱،۱]یک شاخص عینی کیفیت عضله، یا به عبارتی دیگر مقدار بافت غیر انقباضی درون عضله (بافت چربی یا فیبروز) را نشان می دهد.
طبق مطالعات قبلی، EIیک روش غیر تهاجمی برای ارزیابی ترکیب بافت می باشد، افزایش بافت چربی و بافت همبند درون عضلات، EIرا افزایش می دهد. EIبا قدرت عضلانی همبستگی منفی دارد و این ارتباط، مستقل از اندازه عضله یا سن است. بر اساس مطالعات قبلی، EIقادر به تشخیص عضله اسکلتی آسیب دیده و سالم است و ممکن است آسیب عضلانی یا سازگاری ناشی از تمرینات را نشان دهد.
با این حال، اکثر مطالعات کیفیت عضلانی را با MRIبررسی کردند، که به راحتی در عمل بالینی در دسترس نیست. با پیشرفت تکنولوژی اولتراسونوگرافی، کیفیت عضله را می توان از طریق نرم افزار افلاین DICOM۲بوسیله شدت اکو ( )EIیعنی مقدار بافت غیرانقباضی درون عضله (بافت چربی یا فیبروزی) اندازه گیری کرد. EIشامل میانگین شدت پیکسل عضله است که از طریق اندازه گیری تاریکی ناحیه بدست می آید به گونه ای که رنگ سیاه نشان دهنده کیفیت بالای عضله می باشد. در واقع افزایش چربی و بافت همبندی داخل عضلانی موجب افزایش EIمی گردد. از آنجایی که اندازه گیری روشنایی تصویر دید کلی اما شاید ناکافی در ارتباط با میزان نفوذ چربی در بافت عضلانی بدهد فلذا آشنایی با روش‌های مختلف مانند اندازه گیری FIاز طرق مختلف بوسیله (MRI طبقه بندی) Goutallierو سونوگرافی (اندازه گیری میزان FIاز طریق حدآستانه به وسیله نرم افزار) IMAGEJمیتواند زمینه ساز مطالعات آینده و دید بهتر نسبت به اهمیت کیفیت بافت عای عضلانی در اختلالات ستون فقرات باشد

بررسی تاثیر اضافه شدن تکنیکهای درمان دستی عمومی احشاء (گرینمن) به درمان فیزیوتراپی رایج بر درد، عملکرد و دامنه حرکتی بیماران مبتلا به کمردرد مزمن غیراختصاصی

سعیدجلیلوند[۱]، زهرا مصلی نژاد[۲]، طاهره رضاییان[۳]، محمدرضا نوربخش[۴]، مهدی نوروزی[۵]

۱. کارشناس ارشد فیزیوتراپي ، دانشکده توانبخشي ، گروه آموزشی فیزیوتراپی ، دانشگاه علوم توانبخشی و سلامت اجتماعی ، تهران، ایران

۲. استادیار، گروه آموزشی فیزیوتراپی ، دانشکده توانبخشي ، دانشگاه علوم توانبخشی و سلامت اجتماعی ، تهران، ایران

۳. استادیار، گروه آموزشی فیزیوتراپی ، دانشکده پزشکی مشترک، دانشگاه علوم پزشکی کرمان، کرمان، ایران

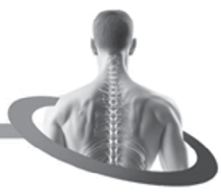
۴. استاد، گروه آموزشی فیزیوتراپی ، دانشکده توانبخشي ، دانشگاه علوم توانبخشی و سلامت اجتماعی ، تهران، ایران

۵. استادیار ،گروه آمار زیستی و اپیدمیولوژی، دانشکده توانبخشی،دانشگاه علوم توانبخشی و سلامت اجتماعی، تهران، ایران

مقدمه و اهداف: نزدیک به ۸۰٪ مردم در دوران بزرگسالی با کمردرد مواجه میشوند. داده‌های اپیدمیو لوژیک که طی دو دهه اخیر جمع آوری شده اند پیشنهاد میکنند که غالب کمر دردها و گردن دردها با منشا غیر اختصاصی هستند و میزان شیوع آنها بالا تخمین زده میشود. از طرفی، بروز مشکل در حرکت و عملکرداحشائ می تواند باعث درد پراکنده و گاها موضعی شود که ممکن است به دیگر ساختارها نیز منتشر شود. هدف درمان دستی احشائ کاهش درد در ساختار سوماتیکی است که عصب دهی مشترک با احشائیی دارد که تحت درمان قرار میگیرند . هدف تحقیق حاضر بررسی تاثیر اضافه شدن تکنیکهای درمان دستی عمومی احشاء (گرینمن) به درمان فیزیوتراپی رایج بر درد، عملکرد و دامنه حرکتی بیماران مبتلا به کمردرد مزمن غیراختصاصی است.

مواد و روش‌ها: این کارآزمایی بالینی کنترل شده یک سویه کور بر روی ۴۰ ب‌یمار(مرد) با کمردرد مزمن غیر اختصاصی انجام شد. بیماران به طور تصادفی به دو گروه درمان فیزیوتراپی رایج و فیزیوتراپی رایج بعلاوه تکنیکهای درمان دستی عمومی احشاء (گرینمن) تقسیم شدند. درهر دو گروه پس از ۸جلسه درمانی با فرکانس ٤ بار در هفته ، میزان درد ، دامنه حرکتی و ناتوانی عملکردی ، قبل از مداخله، بلافاصله بعد از مداخله و۲هفته بعد از مداخله، اندازه گیری شد. نرمال بودن داده ها در دو گروه با آزمون شاپیرو ویلک و تغییرات پارامترها با آزمون تی زوجی و ت‌ی مستقل بررسی شد.

یافته ها: قبل از شروع مداخله متغیرهای وابسته ی دو گروه با هم اختلاف معنادار نداشتند. در هر دو گروه کنترل و مداخله ، در همه متغییرها (VAS,FTF,ODI) ، در طی جلسات درمان شاهد بهبودی بودیم. مقایسه بین گروهی نشان میدهد که میزان بهبودی در گروه مداخله یعنی ،گروهی که علاوه بر درمان رایج فیزیوتزاپی ، تکنیک‌های درمان دستی عمومی احشا(گرینمن)



را دریافت کرده اند، بیشتر از گروه کنترل است. گرچه میزان بهبودی در گروه مداخله ، در ارزیابی بلافاصله پس از مداخله ، نسبت به گروه کنترل بیشتر بوده است؛ ولی در ارزیابی ۲ هفته پس از پایان جلسات درمانی ، با حذف اثر متغییر بلافاصله بعد از مداخله،اختلاف معنی داری بین دو گروه مشاهده نشد.بنا بر این نتیجه ، ماندگاری اثر درمان فیزیوتراپی رایج بعلاوه درمان دستی عمومی احشا(گرینمن) نسبت به فیزیوتراپی رایج ارجحیتی ندارد.

نتیجه گیری: با توجه به نتایج مطالعات گذشته وتحقیق حاضر ، در مجموع میتوان گفت که فرضیه وجود ارتباط بین احشاء و کمردرد مزمن غیراختصاصی میتواند تایید شود . و تاکید بر درمان دستی احشا در کنار درمان رایج فیزیوتراپی میتواند تاثیرات معنی داری بر بهبود علائم بیماران مبتلا به کمردرد مزمن غیراختصاصی داشته باشد.

Investigating the use of Artificial Intelligence as an Assessment Tool for Scoliosis Parameters: A literature review

Termeh pourgholam[1], Dr Farhoud Saeid ershadi[2], Sana Aslani Baraghani[3]
1.Master's student in orthotics and prosthetics.University of Social Welfare and Rehabilitation Sciences, Tehran, Iran
2.Assistant professor in orthotics and prosthetics.University of Social Welfare and Rehabilitation Sciences, Tehran, Iran
3.Master's student in orthotics and prosthetics.University of Social Welfare and Rehabilitation Sciences, Tehran, Iran

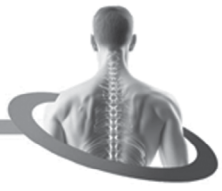
Introduction: Scoliosis, a condition characterized by an abnormal lateral spinal curve and vertebral rotation, affects individuals across various age groups. Traditional methods, including manual Cobb angle measurements on radiographs, are susceptible to errors and inconsistencies. Artificial intelligence (AI) has emerged as a revolutionary tool capable of automating assessments, enhancing precision, and improving diagnosis speed and reliability. This article reviews the application of AI in various parameters of scoliosis assessment and diagnosis.

Objective: The study aims to explore the role of AI in improving scoliosis diagnosis, screening, and treatment planning. By providing automated, accurate, and efficient evaluations, AI can enhance clinical workflows and reduce human errors in scoliosis care.

Materials and Methods: The authors conducted a literature review of articles published between 2020 and 2024. Databases such as Google Scholar, PubMed, Scopus, and Web of Science were searched using keywords like "assessment," "artificial intelligence," and "scoliosis." A total of 14 peer-reviewed articles meeting the inclusion criteria were analyzed.

Findings: AI has demonstrated significant potential in automating key aspects of scoliosis diagnosis. Advanced algorithms, particularly deep learning models like convolutional neural networks (CNNs), have shown high accuracy in identifying spinal landmarks and measuring the Cobb angle. AI systems are also capable of analyzing 3D images, overcoming limitations of traditional 2D radiographs, which often fail to capture complex spinal deformities. Moreover, machine learning models can predict scoliosis progression by analyzing patient data, aiding in early interventions and improved treatment planning.

Discussion: The integration of AI in scoliosis assessment is transforming clinical practices. Real-time imaging analysis, prediction models, and AI-supported monitoring improve both



diagnostic accuracy and workflow efficiency. However, challenges such as data privacy concerns, regulatory hurdles, and the need for large training datasets persist. Collaboration between healthcare providers and AI researchers is crucial for refining algorithms and ensuring AI integration within clinical settings.

Conclusion: AI has the potential to revolutionize scoliosis care by providing more reliable, accurate, and efficient diagnostic tools. Future research should address existing challenges, expand clinical trials, and improve data integration to ensure widespread adoption. With continued advancements, AI can enhance scoliosis assessment and treatment outcomes, benefiting patients globally.

Keywords: Artificial intelligence, scoliosis, assessment, diagnosis, Cobb angle, machine learning, evaluation, tool, measurement

Effects of Spinal Orthoses on Balance Control and Posture Stability in Elderly Individuals with Hyper-kyphosis: A literature review

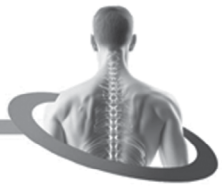
Sana Aslani Baraghani[1], Dr Farhoud Saeid ershadi[2], Termeh Pourgholam[3]
1.Master's Student, Department of Orthotics and Prosthetics.University of Social Welfare and Rehabilitation Sciences, Tehran, Iran
2.Assistant professor, Department of Orthotics and Prosthetics.University of Social Welfare and Rehabilitation Sciences,Tehran,Iran
3.Master's Student, Department of Orthotics and Prosthetics.University of Social Welfare and Rehabilitation Sciences, Tehran, Iran

Introduction: Hyper-kyphosis, an exaggerated curvature of the thoracic spine, is a common postural abnormality among elderly individuals. It is often caused by age-related changes such as reduced bone mineral density, vertebral fractures, and weakened back muscles. This condition impairs physical function, quality of life, and increases the risk of falls and fractures. Non-surgical approaches, including spinal orthoses and postural training exercises, have gained attention as effective methods for managing hyper-kyphosis. Devices like the Spino med orthosis are designed to provide better postural alignment, improve muscle endurance, and enhance balance by offering proprioceptive feedback.

Objective: The objective of this study is to evaluate the effectiveness of spinal orthoses in improving balance control and postural stability in elderly individuals suffering from hyper-kyphosis.

Materials and Methods: A systematic search was conducted using databases such as Google Scholar, PubMed, Scopus, and Science Direct. Keywords included "hyper-kyphosis," "balance control," "spinal orthoses," and "elderly." Fifteen relevant studies were identified, with ten selected for detailed analysis based on their focus on balance and postural improvement in elderly subjects.

Findings: The findings indicate that spinal orthoses have significant benefits in improving physical performance in elderly individuals with hyper-kyphosis. These orthoses reduce excessive activity in the erector spinae muscles, alleviate spinal strain, and enhance both static and dynamic balance. Tests such as the Timed Up and Go (TUG) and the Berg Balance Scale (BBS) confirmed improvements in balance. Additionally, walking speed increased, and participants experienced higher confidence in mobility, as measured by the Activities-Specific Balance Confidence (ABC) scale. These improvements were sustained over a period of four weeks.



Discussion: The reviewed literature highlights the role of spinal orthoses in enhancing balance and postural control among elderly individuals. By improving spinal alignment and reducing musculoskeletal pressure, these devices contribute to improved physical performance and reduce fall risk. Proprioceptive feedback and optimized muscle activity are key mechanisms through which orthoses support better balance.

Conclusion: Spinal orthoses represent a promising non-invasive intervention for elderly individuals with hyper-kyphosis. They enhance balance control, posture stability, and quality of life. Future studies should explore larger and more diverse populations to strengthen the evidence for widespread clinical use of these devices.

Keywords: Aging, Geriatric, Seniors, Elderly, older Adualt, Hyper-kyphosis, Postural Balance, Hyper-kyphosis, Balance Control, Spinal Orthoses, Spinal Orthosis

توسعه الگوریتم‌های هوش مصنوعی برای پیش‌بینی مسیرهای بهبودی در بیماران مبتلا به آرتروز ستون فقرات

محمدرضا علینقی[۱]، مبینا سیفی[۱]، دکتر نورالدین کریمی[۲]

۱. دانشجوی کارشناسی فیزیوتراپی، گروه فیزیوتراپی، دانشگاه علوم توانبخشی و سلامت اجتماعی، تهران، ایران

۲. استاد، گروه فیزیوتراپی، دانشگاه علوم توانبخشی و سلامت اجتماعی، تهران، ایران.

چکیده

آرتروز ستون فقرات (Osteoarthritis; OA) یک بیماری تحلیل‌برنده مفصلی است که به طور قابل توجهی بر تحرک و کیفیت زندگی تأثیر می‌گذارد. پیشرفت‌های اخیر در هوش مصنوعی (Artificial Intelligence) مسیرهای جدیدی را برای پیش‌بینی روند بهبودی بیماران فراهم کرده و امکان طراحی استراتژی‌های توانبخشی شخصی‌سازی‌شده را فراهم می‌کند. این مرور، پژوهش‌های کنونی در زمینه مدل‌های پیش‌بینی مبتنی بر AI را گردآوری کرده و بر کاربردهای آن در مدیریت OA ستون فقرات تمرکز دارد. روش‌شناسی‌های کلیدی، چالش‌ها و مسیرهای آینده مورد بررسی قرار گرفته‌اند و بر ادغام داده‌های بالینی، تصویربرداری و بیومکانیکی برای افزایش دقت پیش‌بینی تأکید شده است.

مقدمه: OA ستون فقرات، که با تخریب غضروف و درد مزمن مشخص می‌شود، به مداخلات درمانی متناسب با شرایط بیمار نیاز دارد. روش‌های پیش‌بینی سنتی اغلب فاقد دقت کافی هستند که این امر منجر به نتایج توانبخشی نامطلوب می‌شود. AI، به ویژه یادگیری ماشین (Machine Learning; ML) و یادگیری عمیق (Deep Learning; DL)، پتانسیل تحول‌آفرینی دارد؛ زیرا با تجزیه و تحلیل مجموعه داده‌های پیچیده، الگوهایی را شناسایی می‌کند که در روش‌های متداول قابل تشخیص نیستند. این مرور به بررسی چگونگی توسعه الگوریتم‌های AI برای پیش‌بینی مسیرهای بهبودی، بهینه‌سازی برنامه‌های درمانی و بهبود نتایج بیماران مبتلا به OA ستون فقرات می‌پردازد.

روش‌های هوش مصنوعی در پیش‌بینی آرتروز ستون فقرات

۱. یکپارچه‌سازی داده‌ها و استخراج ویژگی‌ها

مدل‌های AI از داده‌های چندوجهی مانند تصویربرداری MRI، سوابق الکترونیکی سلامت (Electronic Health Records; EHRs) و شاخص‌های بیومکانیکی بهره می‌برند. به عنوان مثال، شبکه‌های عصبی کانولوشنی (Convolutional Neural Networks; CNNs) اسکن‌های MRI را برای تشخیص تغییرات دژنراتیو اولیه تحلیل می‌کنند، در حالی که الگوریتم‌های جنگل تصادفی (Random Forest) داده‌های بالینی را برای پیش‌بینی زمان بهبودی پردازش می‌کنند.

۲. عملکرد الگوریتم‌ها

مطالعات نشان می‌دهند که ماشین‌های بردار پشتیبان (Support Vector Machines; SVMs) در

طبقه‌بندی پیشرفت OA برتری دارند و دقتی بیش از ۸۵٪ در پیش‌بینی تحلیل غضروف ارائه می‌دهند. مدل‌های یادگیری عمیق مانند درخت‌های تقویت‌شده گرادیان (Gradient-Boosted Trees) نیز در مطالعات طولی کارآمد بوده و تغییرات انحنای استخوان را با نتایج بهبودی مرتبط می‌کنند.

۳. برنامه‌ریزی درمانی شخصی‌سازی‌شده

AI امکان ارائه مداخلات متناسب با فنوتیپ بیماران را از طریق خوشه‌بندی آن‌ها بر اساس شدت بیماری یا نشانگرهای ژنتیکی فراهم می‌کند. به عنوان مثال، تکنیک‌های یادگیری بدون نظارت (Unsupervised Learning) فنوتیپ‌های متمایز OA را شناسایی کرده و پروتکل‌های فیزیوتراپی هدفمندی را پیشنهاد می‌دهند.

چالش‌ها و محدودیت‌ها

کیفیت و دسترسی به داده‌ها: کیفیت و دسترسی به داده‌ها: دسترسی محدود به مجموعه داده‌های باکیفیت OA ستون فقرات، به ویژه مقالات کامل که در دسترس عموم نیستند، روند آموزش مدل‌ها را دشوار می‌کند.

قابلیت تفسیر: بسیاری از مدل‌های AI، به ویژه مدل‌های DL، به عنوان «جعبه سیاه» عمل می‌کنند که اعتماد بالینی را با چالش مواجه می‌سازد. تکنیک‌هایی مانند Grad-CAM در حال بررسی هستند تا فرآیند تصمیم‌گیری مدل‌ها را شفاف‌تر کنند.

ملاحظات اخلاقی: وجود سوگیری در داده‌های آموزشی و مسائل مربوط به حفظ حریم خصوصی بیماران از چالش‌های اساسی این حوزه محسوب می‌شوند.

مسیرهای آینده

۱. همکاری‌های چندمرکزی

گسترش مجموعه داده‌ها از طریق ابتکاراتی مانند پروژه ابتکار (Osteoarthritis Initiative; OAI) OA می‌تواند به افزایش تعمیم‌پذیری مدل‌ها کمک کند.

۲. پایش بلادرنگ

ادغام حسگرهای پوشیدنی (Wearable Sensors) با AI می‌تواند بازخورد پویایی از روند پیشرفت بیماران ارائه دهد.

۳. مدل‌های ترکیبی

ترکیب ML با شبیه‌سازی‌های بیومکانیکی ممکن است دقت پیش‌بینی را بهبود بخشد.

نتیجه‌گیری: الگوریتم‌های هوش مصنوعی پتانسیل بالایی برای تحول در مدیریت آرتروز ستون فقرات دارند و امکان پیش‌بینی دقیق و مبتنی بر داده را برای بهبودی بیماران فراهم می‌کنند. با این حال، اجرای موفقیت‌آمیز این فناوری مستلزم رفع محدودیت‌های فنی، پرداختن به ملاحظات اخلاقی و تقویت همکاری‌های میان‌رشته‌ای است. پژوهش‌های آینده باید بر اعتبارسنجی این مدل‌ها در محیط‌های بالینی متنوع تمرکز کنند تا از قابلیت اطمینان و مقیاس‌پذیری آن‌ها اطمینان حاصل شود.

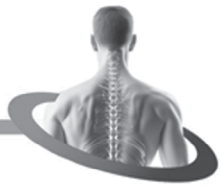
An Update on NASM Approach to Corrective Exercises Training in Individuals with Increased Thoracic Kyphosis

Vahid Mazloum[1], Masoume Matin[2]
1. Physical Therapist, PhD in Sports Injuries and Corrective Exercises, Tehran, Iran.
2. Department of Physiotherapy, School of Rehabilitation Sciences, Iran University of Medical Sciences, Tehran, Iran.

ABSTRACT

Increased thoracic kyphosis (ITK) is considered as a common postural misalignment with severe physical and psychological consequences raising the concern about its complications. Poor habitual posture, occupational physical stress, congenital conditions, progressive neurological disorders, muscular imbalances, and other medical conditions are assumed as the etiology of ITK. However, there are two primary therapeutic options for the management of ITK, including aggressive interventions (e.g. surgical treatments) and conservative methods (e.g. therapeutic and corrective exercises training). Meanwhile; National Academy of Sports Medicine (NASM) has represented a comprehensive therapeutic exercise program which is called NASM Corrective Exercise Continuum for the conservative management of postural abnormalities such as ITK. In the current presentation, we are going to have a brief review on the properties, advantages, disadvantages, and other aspects of this corrective exercise program for clients with ITK.

Keywords: Thoracic kyphosis; Posture; Corrective exercise; Narrative review.



بررسی اثر فیزیوتراپی بر شب ادراری اطفال

حانیه حبیبی[۱]، زهرا مصلی نژاد[۲]
۱. کارشناس ارشد فیزیوتراپی دکتر
۲. دانشیار دانشگاه علوم توانبخشی و سالمت اجتماعی

چکیده:
مقدمه: بی اختیاری ادرار در اطفال یک مساله ی بهداشتی و اجتماعی جهانی است که عالوه بر سالمت اجتماعی ،روانی و اجتماعی بر بار اقتصادی کشورها نیز می افزاید زیرا رابطه ی مستقیمی بین شب ادراری کودکان با فوریت‌های ادراری ، به تعویق افتادن ادرار و یبوست‌های مزمن دوران بزرگسالی وجود دارد. هدف: این مطالعه یک مرور سیستماتیک بر مقاالتی است که به بررسی اثر فیزیوتراپی در شب ادراری کودکان انجام شده اند. مقاالتی که از ابتدا تا فوریه ۲۰۲۵ منتشر شده اند. برای بررسی پژوهش ها جستجو در بانک اطالعاتی انالین ۱۸۰ مقاله به دست آمد که ۴۰ مقاله مورد بررسی قرار گرفت.
یافته ها: حوادث خیس شدن و کثیف شدن بخشی از بلوغ عصبی یک مثانه و روده سالم از نظر آناتومیکی و یادگیری است که از طریق تمرین و آموزش توالت بهبود میابد تا عادات مناسب برای مثانه و روده سالم ایجاد کند. عالوه بر تغذیه و آموزش مناسب برای کودکان مدیریت فیزیوتراپی نقش مهمی در بهبود اختالل عملکرد مثانه و روده دارد. پوسچر کودک ، ریتم تنفسی ، ورزش‌های کف لگن، تکنیک‌های درمان دستی ، آزاد سازی بافت نرم و استفاده از تکنیک‌های دستی احشایی و تحریکات الکتریکی از جمله مداخالتی است که در کودکان مبتال به شب ادراری مورد تاکید قرار گرفته اند.
نتیجه‌گیری: تکنیک‌های فیزیوتراپی نقش مهمی در بهبود شب ادراری کودکان دارد . ابتالبه یبوست مزمن در بزرگسالی و یا تکرر ادرار در بزرگساالن از عوارض شب ادراری کورکان است که با مدیریت فیزیوتراپی در کودکی پیشگیری میشود.
کلیدواژگان: تکنیک‌های فیزیوتراپی، شب ادراری، اطفال، پوسچر کودک، اختالل مثانه و روده، بی اختیاری

The Relationship Between Hip and Knee Flexibility and Post-coronary Angiography Pain

Fatimah khalifeh[1], Noureddin Karimi[2], parastoo baraghoosh[3], mehrdad naghikhani[4], habib lah mehdizadeh[5]
1. PhD student of physiotherapy, university of social welfare and rehabilitation sciences.
2.Department of Physiotherapy, University of Social Welfare and Rehabilitation Sciences, Tehran, Iran
3. Department of Physiotherapy, University of Social Welfare and Rehabilitation Sciences, Tehran, Iran
4. Department of Physiotherapy, University of Social Welfare and Rehabilitation Sciences, Tehran, Iran
5. interventional cardiology fellow-ship,shahid lavasani hospital,Tehran,iran

Abstract

Purpose: Coronary angiography can cause post-procedural pain, and limited flexibility in the hips and knees may contribute to this discomfort. This study was designed to assess the flexibility of the hip and knee and its relationship with low back pain after femoral angiography.

Methods: This cross-sectional study was conducted on 42 participants (27 men and 15 women, aged 30-85 years) after non-emergency angiography at Dr. Shariati Hospital. Demographic data, employment status, and angiography history were collected through an individual data questionnaire. Muscle flexibility was assessed using a goniometer and tape measure, and visual analog scale (VAS) was applied to evaluate the score of pain. A Spearman correlation coefficient and Kruskal-Wallis tests were used to examine the relationship between variables and pain.

Results: The analysis revealed no significant difference in mean pain scores between men and women (P=0.662), employment status (P=0.265), or history of angiography (P=0.262). We observed positive correlations between pain and the modified Thomas test for hip extension, active knee extension test, and forward bending test (rho=0.745, rho=0.594, and rho=0.433; P=0.00, P=0.00, and P=0.04, respectively). Conversely, the modified Thomas test for knee flexion showed a negative correlation with pain (rho=-0.591, P=0.00). No significant differences were found between the sit-and-reach test and pain (rho=0.337, P=0.29). Age demonstrated a positive correlation with pain (rho=0.312, P=0.04). However, weight did not show a significant correlation with pain (rho=-0.074, P=0.64).

Conclusion: A relationship was observed between some flexibility tests and pain. Reduced hip and knee flexibility correlated with higher pain levels after femoral angiography. While age showed a positive relationship with pain, weight did not show any relationship with pain. These results emphasize the importance of considering flexibility in managing pain after femoral angiography.

Efficacy of Telerehabilitation in Managing Chronic Whiplash-Associated Disorders

Ali Ashiani , Reza Azideh , Mohammad Abdi , Melika Barazandeh Far , Nazanin Darvishi , Ali Javid
Student Research Committee, University of Social Welfare and Rehabilitation Sciences, Tehran, Iran

Abstract:

Whiplash-associated disorders (WAD) are common consequences of motor vehicle accidents, often leading to chronic neck pain and functional limitations. Traditional rehabilitation approaches for chronic WAD typically involve in-person physiotherapy sessions, which can be resource-intensive and may limit access to care. In recent years, telerehabilitation-utilizing digital platforms to deliver structured exercise programs-has gained attention as a viable alternative to conventional physiotherapy, offering increased accessibility and efficiency.

Research indicates that structured internet-based exercise programs can effectively support patients with chronic WAD, providing them with guided rehabilitation while reducing the need for frequent in-person sessions. Studies have shown that telerehabilitation can yield comparable improvements in neck disability, pain intensity, and functional outcomes when compared to conventional face-to-face physiotherapy. By integrating scheduled online supervision and minimal in-person visits, telerehabilitation not only maintains treatment effectiveness but also optimizes healthcare resource utilization.

A key advantage of telerehabilitation is its ability to reach a broader patient population, particularly those with geographical or logistical barriers to regular clinic visits. Additionally, it allows for personalized exercise guidance, remote monitoring, and real-time feedback, contributing to adherence and long-term treatment success. However, challenges such as patient engagement, technological literacy, and the need for occasional hands-on assessments should be considered when implementing telerehabilitation programs.

Overall, telerehabilitation presents a promising, cost-effective approach to managing chronic WAD, potentially expanding access to physiotherapy services while maintaining clinical outcomes equivalent to traditional rehabilitation models. Further research and long-term evaluations are necessary to refine its implementation and address any limitations associated with remote rehabilitation methods.

بررسی دو systematic review در زمینه تاثیر ترکشن مکانیکی بر Lumbar radiculopathy و LBP

Maryam Alizadeh
MD

1. Effectiveness of Mechanical Traction for Lumbar Radiculopathy: A Systematic Review and Meta-Analysis(۲۰۲۰)

هدف: رادیکولوپاتی کمری (LR) یک سندروم درد است که در اثر فشار/تحریک ریشه (های) عصبی کمری ایجاد می‌شود. ترکشن یک درمان محافظه‌کارانه شناخته شده و رایج برای LR است، گرچه اثربخشی آن مورد بحث است. این مطالعه به بررسی اثربخشی ترکشن مکانیکی در رادیکولوپاتی کمری می‌پردازد.

روش‌ها: داده‌ها از CENTRAL، PUBMED، CINAHL، Scopus، ISI Web of Science، و PEDro از ابتدا تا آوریل ۲۰۲۰ به دست آمده‌اند. همه RCT ها روی بزرگسالان مبتلا به LR، با استفاده از ترکشن مکانیکی، و بدون هیچ‌گونه محدودیتی در مورد زمان یا زبان انتشار در نظر گرفته شده‌اند.

نتایج: متاآنالیز نتایج حاصل از مطالعات با کیفیت پایین نشان داد که کشش مکانیکی در حال طاق‌باز (supine) که به درمان‌های فیزیوتراپیست اضافه می‌شود، اثرات قابل توجهی بر روی درد (g = ۰٫۵۸− [۹۵٪ confidence interval = ۰٫۸۷− to ۰٫۲۹−]) و ناتوانی (g = ۰٫۷۸− [۹۵٪ confidence interval = ۱٫۴۵− to ۰٫۱۱−]) دارد. آنالیز نتایج حاصل از مطالعات با کیفیت بالا در مورد ترکشن مکانیکی در حالت دمر (prone) که به مداخه فیزیوتراپیست برای درد و ناتوانی اضافه می‌شود، معنی‌دار و قابل توجه نبود. این نتایج در پیگیری کوتاه مدت (تا سه ماه بعد از مداخله) نیز مشهود بود.

نتیجه‌گیری: مطالعات نشان می‌دهند که برای درد و ناتوانی در LR، اثربخشی کوتاه مدت ترکشن مکانیکی در حالت supine در صورت افزودن آن به مداخله فیزیوتراپیست وجود دارد.

2. The effects of the addition of mechanical traction to physical therapy on low back pain? A systematic review with meta-analysis (2023)

هدف: این مطالعه با هدف انجام یک مرور سیستماتیک و متاآنالیز از کارآزمایی‌های تصادفی‌سازی و کنترل شده (RCTs) بر روی اثرات مقایسه‌ای انواع یا پارامترهای مختلف ترکشن کمری در کمردرد انجام گرفته است.

روش‌ها: پایگاه‌های اطلاعاتی CENTRAL، CINAHL، ISI Web of Science، PEDro، PubMed، و Scopus از ابتدا تا ۳۱ مارس ۲۰۲۱ جستجو شده‌اند. همه RCT ها که انواع یا پارامترهای مختلف ترکشن کمری را در بزرگسالان که از کمردرد همراه یا بدون رادیکولوپاتی کمری (LR) شکایت داشتند، مقایسه شده‌اند. هر گونه محدودیتی در مورد زمان انتشار یا زبان اعمال شده است. دو بازبین به طور مستقل مطالعات را انتخاب کردند، ارزیابی کیفیت را انجام دادند و نتایج را

استخراج کردند. متاآنالیز از مدل اثرات تصادفی استفاده کرده است.
نتایج: شانزده مطالعه معیارهای ورود به تحلیل کیفی را برآورده کردند و پنج مطالعه ادغام شدند. متاآنالیز حاصل از نتایج پنج مطالعه بر روی LBP با رادیکولوپاتی، تفاوت قابل توجهی را بین روش‌های ترکشن متنوع در پیگیری‌های کوتاه مدت نشان نداد. شواهد با کیفیت بسیار پایین تا پایین این نتایج را پشتیبانی می‌کند. ترکشن با نیروی زیاد و نیروی کم، بهبودهای بالینی قابل توجهی را در درد نشان داده است.
نتیجه‌گیری: مطالعات اثربخشی کوتاه مدت ترکشن بر درد در LBP با رادیکولوپاتی را صرف نظر از نوع یا دوز مورد استفاده را مطرح می‌کند. اثرات مختلفی از ترکشن غیر از اثرات مکانیکی را می‌توان فرض کرد. این مرور سیستماتیک ممکن است به دلیل اثرات مشابه انواع ترکشن یا دوزهای مختلف، برای عمل بالینی مرتبط باشد.
سطح شواهد: سطح I ، مطالعه درمانی.

Comparing the Hip and Lumbar Joint Range of Motion in Patients with Lower Lumbar Disc Herniation and Healthy Subjects

Mahdieh Mirzapour[1], Omid Shahpari[2], Neda Mostafaei[3], Saeed Akhlaghi[4], Majid Shahbazi[5]*

1. MSC candidate, Department of Physical Therapy, School of Paramedical Sciences, Mashhad University of Medical Sciences, Mashhad, Iran.
2. Assistant Professor, Orthopedic Research Center, Ghaem Hospital, Mashhad University of Medical Sciences, Mashhad, Iran.
3. Department of Physical Therapy, School of Paramedical and Rehabilitation Sciences, Mashhad University of Medical Sciences, Mashhad, Iran.
4. Assistant Professor, Department of Biostatistics, School of Health, Mashhad University of Medical Sciences, Mashhad, Iran.
5. (Corresponding author) Assistant Professor, Department of Physical Therapy, School of Paramedical Sciences, Mashhad University of Medical Sciences, Mashhad, Iran.

Abstract

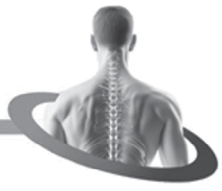
Background: One possible factor contributing to low back pain (LBP) is hip range of motion (ROM). However, there is inconstancy in published studies. It may be due to the heterogeneity of patients. Therefore, the present study focuses on the relationship between hip ROM and lower lumbar disc herniation (LLDH).

Method: A cross-sectional study involved 52 participants between 18 and 65 years old. Two digital inclinometers were utilized to measure the ROM of the lumbar and hip joints in all study participants. For each outcome, two measurements were conducted, and the mean of the two measurements was utilized for analysis. The level of statistical significance was established at $P \leq .05$.

Results: The difference in all ROM between the two groups is significant except for dominant hip flexion ($P<.05$). Lumbar flexion was reduced in LLDH compared to healthy individuals ($P = .003$). The findings manifested a significant correlation between right lumbar rotation and non-dominant hip abduction ($P = .05$), also left lumbar lateral bending, and non-dominant hip flexion ($P = .008$).

Conclusion: Patients with LLDH have reduced hip ROM and lumbar flexion compared to healthy individuals. The study showed correlations between hip and lumbar ROM and emphasized the significance of evaluating hip ROM in LLDH for assessment and treatment planning.

Keywords: Intervertebral Disc Displacement, Joint Range of Motion, Waist-Hip Ratios, Lumbar Disc Disease, Hip Joint Abnormalities



The Necessity of Clinical Laboratories in Physical Therapy: A New Perspective on Addressing social and Professional Needs

Majid Shahbazi[1]*, Tayyebeh Sadat Fatemi[2]
1. Assistant Professor, Department of Physiotherapy, School of Paramedical and Rehabilitation Sciences, Mashhad University of Medical Sciences, Mashhad, Iran.
2. BSc, Department of Physiotherapy, Imam Reza Hospital, Mashhad University of Medical Sciences, Mashhad, Iran.

Abstract

Diagnosis is a process that is not exclusive to any single profession. Physiotherapists, as part of the healthcare system involved in the treatment of disorders, particularly musculoskeletal conditions, require relevant professional diagnoses to select appropriate therapeutic techniques. The role of a physical therapist has evolved from being a technician following prescribed instructions to becoming an autonomous healthcare professional, equipped with solid scientific knowledge and grounded in evidence-based practice. The purpose of Physical Therapy Diagnosis (PTD), also known as Functional Diagnosis (FD), is to identify impairments in the movement system. The absence of standardized diagnostic protocols within physiotherapy has led to variability in practice and, at times, conflicting evidence regarding the efficacy of treatments. This inconsistency underscores the need for establishing clinical physiotherapy laboratories dedicated to generating quantitative data that can support accurate diagnosis and effective treatment planning. Also, the development of specialized laboratory fields in physiotherapy is crucial for enhancing service quality, advancing scientific knowledge, and meeting societal needs. Establishing these programs will enhance patient care and advance physical therapy practices. However, achieving these visions will require careful planning, collaboration, and a commitment to ongoing professional development.

Keywords: Physical Therapy Specialty, Diagnostic Technics and Procedures, Clinical Laboratory, Evidence-Based Practice, Movement Disorders

A New Perspective on Lumbar Disc Herniation Management Using Prone Knee Extension: Case Report

Majid Shahbazi[1*], Tayyebeh Sadat Fatemi[2]
1. Assistant Professor, Department of Physiotherapy, School of Paramedical and Rehabilitation Sciences, Mashhad University of Medical Sciences, Mashhad, Iran.
2. BSc, Ward of physiotherapy, Imam Reza Hospital, Mashhad University of Medical Sciences, Mashhad, Iran.

Abstract

Introduction: Lumbar disc herniation (LDH) is a frequent cause of low back pain and radiculopathy, often resulting in diminished functional capacity and a lower quality of life. Non-surgical interventions are frequently sought to manage symptoms and enhance spinal stability. This case report explores a novel application of the Prone Knee Extension (PKE) exercise as part of a comprehensive physiotherapy regimen aimed at addressing pain, mobility limitations, and functional impairments in a patient with LDH.

Case Presentation: A 34-year-old male with a history of LDH and radiating lower limb symptoms presented with an acute exacerbation following heavy physical activity. MRI imaging confirmed a disc protrusion at the L4-L5 level. The patient reported severe pain, restricted lumbar extension, and functional limitations. A five-week treatment plan was implemented, consisting of 10 physiotherapy sessions combining the PKE exercise, infrared heat therapy, dry needling, diaphragmatic breathing, and core stability exercises, alongside a home exercise program. Significant improvements were observed, including pain reduction, resolution of radiating symptoms, increased lumbar range of motion, and improved sleep quality. Functional assessments using the Oswestry Disability Index (ODI) and Global Rating of Change (GRC) demonstrated reduced disability and enhanced overall function.

Conclusion: This case highlights the potential effectiveness of integrating the PKE exercise into the management of LDH. The approach facilitated pain relief, improved health status, and enhanced functional capacity, suggesting that it could serve as a valuable non-surgical intervention in clinical practice. However, as the findings are preliminary, further research is needed to validate these results.

Keywords: Lumbar Disc Herniation, Pain Management, Physical Therapy, Prone Knee Extension

Virtual Reality Training Versus Motor Imagery for Balance, Gross Motor Functions and Activities Of Daily Living In Children With Cerebral Palsy

Syeda Areeba Fatima[1], Muhammad Kashif[2]
1. Sehat Medical Complex, The University of Lahore, Lahore, Pakistan
2. Riphah International University, Lahore, Pakistan

ABSTRACT

Background: Cerebral palsy (CP) is a common neurodevelopmental disorder limiting motor function. Virtual Reality (VR) and Motor Imagery (MI) enhance balance and movement in CP through engaging, non-invasive techniques.

Objective: To determine the comparative effects of Virtual Reality and Motor Imagery on balance, gross motor function and activities of daily living in children with CP.

Methods: This randomized controlled trial was conducted at Rising Sun Institute, Lahore from November 2023 to June 2024. Sixty-three participants diagnosed with CP were randomly allocated using online randomization tool into three groups; Group A received routine Physical Therapy (PT) for 30 minutes with balance exercises for 15 minutes, Group B received VR for 15 minutes, and Group C received MI for 15 minutes. Both groups B and C received Routine PT for 30 minutes as in Group A and each participant in all groups received interventions for three days on alternative days per week for 12 weeks. Bruininks-Oseretsky Test of motor function Proficiency-2-Short form (BOT 2- SF) was used for motor function and balance and WeeFIM scale for activities of daily living (ADLs) at baseline, 8^{th} week, 12^{th} week, and at 16^{th} week after discontinuation of treatment. The data was entered and analyzed using SPSS 26. For the between-group one-way ANOVA and for within-group comparison repeated measure ANOVA were applied considering p- value<0.05 significant.

Results: VR with routine PT group reported the significant increase in balance and motor function at 8^{th}, 12^{th} week as compared to Group A and C with p-value=0.001 on BOT-2 SF. In addition, WeeFIM score showed the significant in ADLs in VR with routine PT group, as the Mean±SD at baseline was 60.55 ± 5.124 and at 12^{th} week was 78.00 ± 7.940 with a p-value=0.004.

Conclusion: The study concluded that virtual reality with routine PT were more effective in improving balance, gross motor function, and activities of daily living in children with CP compared to MI with Routine PT or Routine PT alone group

Key words: cerebral palsy, motor activities, balance, activities of daily living

Effects of Cervical Distraction Versus Cervical Traction Techniques on Pain, Range of Motion and Function in Patients with Upper Cervical Pain

Hafsa Khan[1], Ghazal Hussain[2], Ayesha Karim*[1], Komal Ahmed[1] ,Dr. Zainab Hassan[2], Nosheen Manzoor[2]
1. Department of Physical Therapy & Rehabilitation, School of Health Sciences, University of Management and Technology (UMT)
2. Department of Clinical Services, School of Health Sciences, University of Management and Technology (UMT)

ABSTRACT

Background: Neck pain is the fourth agent responsible for chronic impairment. Cervical pain affects 5.92% to 38.7% of adults aged 15 to 74, and it is more prevailing in women than men. **Objective:** This study aims to evaluate the effectiveness of cervical traction and cervical distraction techniques in combination with conventional physical therapy for patients with upper cervical pain.

Methodology: The study is randomized control trial (NCT05393323) and conducted at Mehmooda Begum Medical Complex, Faisalabad from March to November 2022. A total of 42 patients, with 20 in each group; Group A received cervical traction and conventional therapy, while Group B underwent cervical distraction and conventional therapy. Inclusion criteria included the positive Flexion-Rotation test with chronic cervical pain (≥ 3 months) and hypomobility of the upper cervical spine. Both groups received 20 treatment sessions over four weeks, with five sessions per week, each lasting 25 minutes. Outcome measures including the neck disability index, Numeric pain rating scale and goniometer for Range of Motion were taken at baseline and after treatment.

Results: Data was analyzed by SPSS 25; age, height, weight and BMI were similar across both groups. Pain levels, measured by numeric pain rating scale, decreased from a median of 7 pre-treatment to 2 in group A and 3 in group B post treatment ($p<0.05$). Neck disability reduced from 22.10 ± 5.77 to 11.70 ± 3.29 in the traction group and from 25.70 ± 5.72 to 15.70 ± 5.21 in the distraction group ($p<0.05$). Range of motion of upper cervical flexion, rotation, extension and rotation were improved in both groups ($p<0.01$).

Conclusion: Both cervical traction and cervical distraction techniques were highly effective in reducing pain, improving Range of Motion and enhancing function in patients with upper cervical pain. While both treatments demonstrated similar benefits, cervical traction showed slightly greater efficacy.

Keywords: Cervical pain, Traction, Conventional Therapy, Distraction, Functional Disability

Effects of Bruegger's Versus Kendall Exercises on Pain, Range of Motion, Craniovertebral Angle and Functional Disability in Patients With Cervical Postural Syndrome

Hira Shaukat*
Riphah International University

ABSTRACT

Background: One of the postural issues known as "Cervical Postural Syndrome" (CPS) is highly prevalent among people of all ages, characterized by projecting chin and rounded shoulders accompanied by pain, stiffness, and hampered flexibility in the cervical region. By indulging specialized therapeutic exercises in the plan of care of patients, impairments and functional disability can be addressed successfully.

Objective: To compare the effects of Bruegger's exercise and Kendall's exercise on pain, cervical range of motion (ROM), craniovertebral angle (CVA), and functional disability in patients with cervical postural syndrome.

Methodology: This was a double-arm, single-blinded, Randomized Clinical Trial (RCT) conducted in Rasheed Hospital, Lahore from March 2024 to June 2024, in which a non-probability convenience sampling technique was used to enroll 36 patients who were allocated into two groups. One group received Bruegger's exercises alongside routine physiotherapy (RPT) and the other group received Kendall's exercises alongside routine physiotherapy (RPT) for 6 weeks, 3 times a week. Outcome measures were NPRS for pain, universal goniometer for ROM and CVA, and Neck disability index (NDI) for functional disability, measured at baseline, 3rd week, and after 6 weeks. The data was entered and analyzed using IBM SPSS version 25.0.

Results: In Bruegger's exercise group, the mean NPRS score after treatment was 2.81±0.40, while in Kendall exercise's group it was 1.25±0.44, with p-value <0.001. Similarly mean CVA in Bruegger's exercise group, after treatment was 40.75±3.39, while in Kendall exercise's group, after treatment mean score was 48.43±2.3 with a p-value <0.001.

Conclusion: Both techniques were found effective for reducing pain, increasing ROM & CVA, and improving functional disability in patients with CPS but Kendall exercises were found to be more effective statistically.

Keywords: Bruegger's exercises, Bad Posture, Forward neck posture, Forward Head, Kendal exercises, Neck pain.

Determining the Effects of Multimodal Manual Therapy alone and Multimodal Therapy Along with Cognitive Behavioral Therapy on Scores of Keel Start Back Screening Tool in Patients of Chronic Low Back Pain

Muhammad Mahmood Alam[1], Dr Suriyakala Perumal Chandran[2], Saiem Alam[3*]
1. Saeed College of Rehabilitation sciences, Lahore, Pakistan.
2. Faculty of medicine, Lincoln university college, Malaysia
3. Clinical physiotherapist, Farooq Hospital, Lahore

Background: About 619 million people are affected by Low back pain (LBP). This leads to disability, a decline in productivity, and great economic costs. An integrated treatment strategy is required to address chronic LBP. Problems associated with LBP need to be addressed physically, psychologically, and socially. A combination of Cognitive Behavioral Therapy (CBT) and Multimodal Manual Therapy (MMT) proves to be very effective in this regard.

Objective: The aim of this study is to determine the effects of multimodal manual therapy alone versus multimodal manual therapy along with cognitive behavioral therapy on scores of Keel Start back screening tool (KSTB) in patients suffering from chronic low back pain, focusing on patient outcomes related to disability, pain, and psychological well-being.

Methodology: This randomized control trial was conducted at Akhtar Saeed physiotherapy clinic in Lahore, Pakistan, for 8 weeks. 108 participants with chronic LBP were recruited based on the inclusion criteria of 20-59 years of age, diagnosed by chronic LBP lasting for 12 weeks, and with no treatment before. This study consist of two groups; Group A:MMT alone, Group B: CBT and MMT. KSTB scores were observed before and after the treatment. The outcome measures of this study include Oswestry Disability Index (ODI), Pain Catastrophizing Scale (PCS), and keel start back screening tool scores. SPSS software is used for data analysis, and paired t-tests and ANOVA were applied for statistical comparisons.

Results: Demographic analysis of these groups showed there was no bias in the outcomes of the treatment. KSTB scores before the treatment were same for both groups (Mean ± SD: Group A = 6.22 ± 1.45, Group B = 6.54 ± 1.70). Group B post treatment showed a lower Keel start back screening scale score as compared to Group A(Mean ± SD: 2.91 ± 0.99 vs. 1.31 ± 0.64, p-value < 0.05). The mean difference between the scores was 1.59. The reduction was

more apparent in the CBT and MMT group.

Conclusion: An integration of CBT and MMT proved to be useful in lowering the KSTB score which showed that the risk for persistent ability was lessened. The results portray the significance of combining CBT with manual therapies for chronic LBP, thus emphasizing the importance of a biopsychosocial approach that addresses physical as well as psychological elements in treatment.

Key words: Cognitive Behavioral Therapy, Low Back Pain, Keele STarT Back Tool

Effects of Telerehabilitation Versus Clinic-Based Task-Oriented Circuit Training on Upper Extremity Functions and Quality of Life in Parkinson's Patients, A Randomized Clinical Trial

Zunaira Ahmad[1], Arnab Altaf[2]
1. Sehat Medical Complex, The University of Lahore, Lahore, Pakistan
2. Riphah International University, Lahore, Pakistan

ABSTRACT

Background: Parkinson's disease is a neurodegenerative disorder that primarily affects the motor system and the dexterity of the upper limb. Working on its rehabilitation is an important question these days. Growing evidence supports the efficacy of task-specific training, and telerehabilitation has also piqued researchers' interest.

Objective: To determine the effects of telerehabilitation versus clinic-based task-oriented circuit training on upper extremity functions and quality of life in Parkinson's patients.

Methods: This double blind, parallel group, randomized clinical trial (Trial no. NCT06111924) was conducted at Sehat Medical Complex, Lahore, from June 2023 to December 2023. 28 participants, meeting the eligibility criteria, underwent randomization using the Online Randomizer tool were assigned to either Task oriented circuit training-clinic based group (n=14) Task oriented circuit training- telerahabilitation group (n=14). Assessment tools, including the Jebsen Taylor Hand Function Test (JTHFT) for upper limb function dexterity, the Box and Block Test (BBT) for manual dexterity, and the Parkinson's Disease Questionnaire (PDQ-8) for Quality of life, were employed to collect comprehensive data pre-intervention and post-intervention (6th week). Data analysis of 28 patients was done by using SPSS 26 software.

Results: Normally distributed data $p>0.05$ from 28 participants was analyzed. Both groups showed improvement as within-group analysis revealed $p<0.05$, but between-group analysis of JTHFT, BBT, and PDQ-8 results showed a p-value of 0.13, 0.85, and 0.87, respectively, indicating improved upper extremity function and quality of life. Results showed both interventions were effective, with telerehabilitation showing a lower dropout rate.

Conclusion: The study contributes to the existing literature by directly comparing these

two treatment modalities, addressing a gap in knowledge and offering a nuanced understanding of their impact on upper extremity motor functions in PD. Telerehabilitation and clinic-based training improved upper limb function and quality of life in Parkinson's patients. Telerehabilitation offers a viable, accessible alternative to in-person therapy. Further studies with larger samples and long-term follow-up are recommended.

Keywords: Parkinson's disease, Quality of Life, Telerehabilitation, Task-oriented circuit training, upper limb dysfunction.

Validity and Reliability of the SPINET Spinal Mouse in Measuring Kyphosis and Lordosis Angles

Fatemeh Hosseinzadeh Khankahi1,Shamim khursandi2
1. Bachelor student of Orthotics and Prosthetics, student research committee, University of Social Welfare and Rehabilitation Sciences, Tehran, Iran

2.Bachelor student of Orthotics and Prosthetics, student research committee, University of Social Welfare and Rehabilitation Science, Tehran, Iran

Background and Objective: The SPINET Spinal Mouse (manufactured by Arman Tajhiz Medisa) is a non-invasive device designed for measuring thoracic kyphosis and lumbar lordosis angles. Given the importance of its accuracy and reliability in diagnosing and monitoring spinal deformities, this study aimed to assess its validity and reliability by comparing its measurements with predefined reference template angles.

Methods: In this study, 10 templates with predefined kyphosis and lordosis angles, precisely cut using CNC technology, were used as reference values. Each template was measured four times, with two measurements taken by Evaluator 1 and two by Evaluator 2. To assess validity, the Spinal Mouse measurements were compared with the actual template values. Intra-rater reliability and inter-rater reliability were evaluated using the Intraclass Correlation Coefficient (ICC), while validity was analyzed using Pearson's correlation coefficient and Bland-Altman analysis.

Results: The findings demonstrated high repeatability and reliability of the Spinal Mouse measurements. The ICC for intra-rater reliability of kyphosis was 0.98, indicating excellent consistency in repeated measurements by each evaluator. Additionally, the ICC for inter-rater reliability of kyphosis was 0.95, confirming a high level of agreement between evaluators, which is considered acceptable for clinical and research applications.

For lordosis, the ICC for intra-rater reliability was 0.97, demonstrating excellent consistency between repeated measurements by the same evaluator. Similarly, the ICC for inter-rater reliability was 0.95, indicating a strong agreement between evaluators, with only minor discrepancies observed.

Regarding validity, the Pearson correlation coefficient between Spinal Mouse data and actual kyphosis values exceeded 0.95 ($p < 0.001$), while for lordosis, it exceeded 0.98 ($p < 0.001$). These results confirm that Spinal Mouse measurements closely correspond to actual reference values, supporting its high validity. Furthermore, Bland-Altman analysis indi-

cated minimal mean differences between Spinal Mouse data and actual values, with deviations falling within the standard range, further demonstrating the device's high accuracy in spinal curvature assessment.

Conclusion: The SPINET Spinal Mouse is a precise, non-invasive, and reliable tool for evaluating kyphosis and lordosis angles, making it suitable for clinical physiotherapy and spinal research applications. However, the minor discrepancies observed between evaluators suggest that standardizing measurement techniques and providing thorough evaluator training can further enhance measurement accuracy.

Keywords:
Validity, Reliability, Spinal Mouse, Kyphosis, Lordosis, Spinal Assessment, Radiation-Free Analysis, Spinal Screening