

Masterarbeiten 2025
Master of Science
in Physiotherapie

Sehr geehrte:r Leser:in

Sie halten heute den Abstractband der Masterarbeiten des Studienjahrgangs MSc Physiotherapie 2022 in den Händen. Er gibt Ihnen einen Eindruck von der Bandbreite der MSc Masterarbeiten.

Die Forschungsprojekte wurden an der ZHAW in verschiedenen Forschungsteams durchgeführt, aber auch in anderen Institutionen mit ihren spezifischen Themen: Beispielsweise in Schlaf- oder Bewegungslabors, in Rehabilitationskliniken und Spitälern.

Im Laufe der Masterarbeiten haben die Studierenden nicht nur ihr methodisches Wissen und Können trainiert, sondern ebenso sehr ihre Projektmanagement Fähigkeiten. In jedem Projekt gibt es Herausforderungen, sei es, dass zu wenige der benötigten Studienteilnehmenden mitmachen, technische Schwierigkeiten mit den benutzten Geräten plagen oder Kommunikationsprobleme gelöst werden müssen.

Die Studierenden haben all das geschafft und Sie können nun die Abstracts von methodisch vielfältigen und interessanten Masterarbeiten lesen.

Ein grosses Danke geht dabei an die Dozierenden und Betreuenden der Masterarbeiten, die unterstützt und das tolle Ergebnis ermöglicht haben.

Nun wünschen wir Ihnen viel Lesevergnügen!

Im Namen des ganzen Studiengangteams



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Leiterin Studiengang

MSc in Physiotherapie

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Welchen Einfluss hat das isolierte Training der Lumbal-Extensoren (ILEX) während sechs Wochen auf die funktionelle Kraft und das funktionelle Beweglichkeitsausmass der Lendenwirbelsäule?

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Hintergrund

Unspezifische Schmerzen der Lendenwirbelsäule (LWS) sind weit verbreitet und können in Zusammenhang mit einer reduzierten Kraft der Lumbalextensoren stehen (M. erector spinae, M. multifidus). Ein isoliertes Training an einem spezialisierten Gerät (Isolated Lumbar Extension Resistance Training, ILEX) führt nachweislich zu einer erhöhten muskulären Aktivierung im Vergleich zu konventionellen Übungen. Bislang gibt es jedoch keine Evidenz für einen Übertrag des ILEX-Trainings auf die alltagsrelevante funktionelle Belastbarkeit der LWS. Die vorliegende Studie untersucht die funktionelle Belastbarkeit der LWS mittels zwei in der Literatur verbreiteten und standardisierten Testungen.

Methode

Die Studie untersuchte im Rahmen einer prospektiven Längsschnitt Studie 18 freiwillige Frauen (Durchschnittsalter 22.05 ± 2.20 Jahre). Die Probandinnen absolvierten eine sechswöchig Trainingsintervention auf dem ILEX-Trainingsgerät. Während des Untersuchungszeitraums wurden die funktionellen Parameter Kraftausdauer-Leistungsfähigkeit mit dem Biering-Sørensen-Test und Beweglichkeit mit dem Sit-and-Reach-Test untersucht. Diese Parameter wurden mit den spezifischen Messungen zu den Parametern isometrische

Maximalkraft und Beweglichkeit aus dem ILEX-Gerät verglichen. Die erhobenen Daten wurden mittels Linear Mixed Model ausgewertet.

Resultate

Durch das Training konnte keine signifikante Veränderung der funktionellen Untersuchungen der LWS gezeigt werden (Kraftausdauer: $p = 0.37$; Beweglichkeit: $p = 0.97$). Die spezifischen Werte des ILEX-Trainingsgerät veränderten sich ebenfalls nicht signifikant (isometrische Maximalkraft: $p = 0.14$, Flexion: $p = 0.45$, Extension $p = 0.16$). Die grösste mittlere Veränderung der standardisierten Daten, zeigte sich in der isometrischen Maximalkraft ($\beta^{\wedge} = 0.35$).

Diskussion/Schlussfolgerung

Die vorliegende Studie zeigt, dass ein isoliertes Trainingsprogramm an einem speziell dafür entwickelten Gerät zu keiner signifikanten Veränderung der funktionellen Belastbarkeit (Kraft und Beweglichkeit) der LWS führt. Um eine Abschiessende Aussage treffen zu können sind jedoch weitere Forschungen mit Einbezug einer Population bestehend aus Patientinnen und Patienten erforderlich.

Parental experiences and needs in the context of interprofessional information delivery during the early rehabilitation of their child

Objective

The early rehabilitation of a child represents a vulnerable phase, during which the provision of information plays a crucial role for parents. This study explored experiences, needs and resulting discrepancies of parents in the context of interprofessional information delivery during early rehabilitation of their child at Kinder-Reha Schweiz, the rehabilitation centre of the University Children's Hospital Zurich, Switzerland.

Methods

Two focus groups were conducted with parents after early rehabilitation of their child. The following three deductive main categories were defined a priori: «experiences», «needs» and «discrepancies». Data were analysed using a deductive-inductive content analysis approach, revealing further subcategories.

Results

Nine parents out of eight families participated in this study. Five subcategories were identified within the three main categories: 1) content of information, 2) information delivery, 3) information procession/ support services, 4) responsibility for the child/ empowerment and 5) framework conditions for rehabilitation.

Conclusion

Our study highlights the importance of a tailored communication during early rehabilitation to meet parental needs. Besides continuous availability of information, proactive and open communication by healthcare professionals and access to support structures that enable empowerment were perceived essential for parents.

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Ausarbeitung, Anwendung und Evaluierung von Massnahmen durch Physiotherapeut:innen mit dem Ziel der Förderung von körperlicher Aktivität bei Patient:innen

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Hintergrund

Körperliche Inaktivität ist eine der Hauptursachen für Krankheiten und Todesfälle in der Schweizer Bevölkerung und verursacht jährliche Kosten in Milliardenhöhe. Ziel dieser Studie ist es, drei Interventionen zur Förderung der körperlichen Aktivität auf den Bereich der ambulanten Physiotherapie anzupassen und sie in einem Pilotprojekt praktisch zu testen.

Fragestellung

Wie schätzen Physiotherapeut:innen in der ambulanten Praxis bei Patient:innen mit muskuloskelettaler Diagnose drei Interventionen unter Bezug der Bewegungsempfehlungen des BASPO unter Berücksichtigung von Akzeptanz, Durchführbarkeit, Kosten und Wirksamkeit ein?

Methode

Es wurde ein Mixed-Methods-Design verwendet. In einem qualitativen Workshop passten Physiotherapeut:innen (n=6) bestehende Interventionen für Ärzt:innen anhand der Design-Thinking-Methode für den physiotherapeutischen Kontext an. Die angepassten Interventionen wurden anschliessend in ambulanten Physiotherapiepraxen von Teilnehmenden (n=12) in drei Monaten pilotiert. Die Teilnehmenden füllten online Fragebögen aus, um Akzep-

tanz, Durchführbarkeit, Kosten und Wirksamkeit der Interventionen zu beurteilen.

Ergebnisse

Die drei Interventionen waren: Motivierende Intervention, Messende Intervention und Kombinierte Intervention. Alle Interventionen hatten eine positive Resonanz, wobei die Motivierende Intervention die höchste Akzeptanz bei den Teilnehmenden aufwies. Die Interventionen waren machbar, überschritten aber die Durchführbarkeit in 5 Minuten. Es entstanden keine zusätzlichen Kosten für Patient:innen oder Teilnehmende. Die Wirksamkeit aller Interventionen wurde positiv bewertet.

Schlussfolgerung

Die Interventionen haben das Potenzial, körperliche Aktivität in der Physiotherapie zu fördern. Die Motivierende Intervention ist für die Anwendung in der Praxis am vielversprechendsten. Für eine weitere Optimierung müsste die Durchführbarkeit auf 5 Minuten gesenkt und die Wirksamkeit weiter quantifiziert werden. Weitere Forschung ist erforderlich, um die Interventionen abschliessend zu bewerten.

Knie-Totalendoprothese Guidelines in ambulanten Praxen in der Schweiz: Eine deskriptive Querschnittsbefragungsstudie

Hintergrund

Arthrose ist eine degenerative Gelenkerkrankung, die häufig das Knie betrifft. Eine Knie-Totalendoprothese (Knie-TEP) ist eine gängige operative Behandlungsmethode zur Linderung der Symptome. In der Schweiz zählt die postoperative physiotherapeutische Nachbehandlung zu den wesentlichen Bestandteilen der Rehabilitation, wobei evidenzbasierte Leitlinien die Behandlungsqualität verbessern sollen.

Fragestellung

Diese Studie untersucht, welche Leitlinien in der ambulanten physiotherapeutischen Nachbehandlung von Knie-TEP in der Schweiz verwendet werden und welche Faktoren die Anwendung dieser Leitlinien beeinflussen.

Methode

Es wurde ein exploratives deskriptives Querschnittsbefragungsdesign gewählt. Die Teilnehmer*innen waren praktizierende Physiotherapeut*innen in der Schweiz, die in ambulanten Praxen oder Krankenhäusern tätig sind und in den letzten sechs Monaten Patient*innen mit Knie-TEP behandelt haben. Die Daten wurden über einen angepassten Fragebogen gesammelt und mit der Software

REDCap verwaltet. Insgesamt wurden 228 Fragebögen ausgefüllt, wovon nach Ausschluss fehlender Daten 163 analysierbare Datensätze übrig blieben.

Resultate

Die Ergebnisse zeigen, dass 41,9 % der Physiotherapeut*innen keine Leitlinien anwenden, wobei Zeitmangel und fehlende spezifische Leitlinien als grösste Barrieren identifiziert wurden. Ein Grossteil der Befragten (41,6 %) besitzt einen Bachelorabschluss, und die grösste Altersgruppe (30,0 %) besteht aus Teilnehmer*innen im Alter von 30-39 Jahren. Die Mehrheit der Befragten sieht die Existenz und Anwendung evidenzbasierter Leitlinien als wichtig an, obwohl Barrieren bestehen.

Schlussfolgerung

Trotz der Anerkennung der Bedeutung evidenzbasierter Leitlinien gibt es in der Praxis erhebliche Hindernisse für deren Anwendung. Massnahmen zur Verbesserung der Bekanntheit und Zugänglichkeit dieser Leitlinien könnten die Nutzung in der ambulanten physiotherapeutischen Nachbehandlung von Knie-TEP erhöhen.

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Development and pilot evaluation of a novel assessment for trunk control using a VR-integrated mobile seat and center of pressure analysis

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Background

Trunk control is a key predictor of functional recovery after stroke and a central target in rehabilitation. This pilot study introduced and evaluated the HoloTeach system as a novel assessment that combines virtual reality (VR), a mobile seat, and center of pressure (COP) analyses to quantify trunk control during seated reaching. The primary aim was to examine whether seated COP parameters predict standing stability, measured by the Multi-Directional Reach Test (MDRT). The secondary aim was to assess the system's feasibility and user-friendliness.

Methods

Twenty healthy older adults (≥ 65 years, 10 males, 10 females) completed the MDRT and a VR-based seated reaching task using the HoloTeach system, with COP data collected via a force plate (standing) and pressure mapping (seated). Kinematic descriptors of the COP trajectory were extracted as total, direction-specific (forward, backward, right, left), and plane-specific (anteroposterior, mediolateral) measures. Multiple linear regressions assessed whether seated COP parameters predict maximum reach distances in the four directions, with all variables z-standardized. User-friendliness was assessed via a structured questionnaire.

Results

Seated COP parameters predict MDRT reach in the forward ($p = 0.002$, RMSE = 0.665), backward ($p = 0.059$, RMSE = 0.756), and lateral left ($p = 0.002$, RMSE = 0.738) directions. Key predictors include direction- and/or plane-specific mean or maximum velocity, maximum sway amplitude, and COP oscillation. Participants rated the system as usable and safe, though improvements to the reachability of VR fruit targets, hand tracking, and sliding on the mobile seat are recommended to optimize task difficulty, enhance user experience, and improve measurement accuracy.

Discussion/Conclusion

Integrating COP analyses with a VR-based seated task may provide a time-efficient, quantitative, and engaging extension of conventional trunk control assessments. Findings support further development and clinical validation of the HoloTeach system as a scalable assessment and rehabilitation technology.

The association between mechanical temporal summation, state anxiety at baseline and persistent low back pain: A 12-month prospective cohort study

Background

Persons with acute low back pain (LBP) have a good prognosis for regaining function, while pain often persists. Neurobiological and psychosocial factors are recognized to amplify pain responses, as reported for central sensitization. This study investigated the combination of mechanical temporal summation (TS) chosen to characterize central sensitization and state anxiety representing a psychological factor and their association with persistent pain.

Methods

A longitudinal prospective cohort study including 176 participants aged between 18 and 65 with acute LBP was performed. The following independent variables were analyzed at baseline: The mechanical TS at the lower back, of whom the Wind-up ratio (WUR) was calculated, and the state anxiety level measured with the State and Trait Anxiety Inventory (STAI-S). The outcome pain intensity was assessed at baseline and 2,3,6 and 12 months after the onset of acute LBP with the Numeric Rating Scale 0–10 (NRS). Linear mixed models (LMM) were used to analyze the association of the independent variables with pain intensity over time.

Results

The mean baseline WUR was 1.3 (SD 0.6) for the right and 1.5 (SD 1.0) for the left side. STAI-S revealed a mean score of 43.1 (SD 5.2). Pain intensity was, on average, 5.4 points (SD 1.6) on the NRS and decreased over one year to a mean of 2.2 (SD 2.4). After one year, 56 % of the participants still experienced pain. The LMM revealed a considerable variation, as seen in large confidence intervals. Therefore, associations of the independent variables (WUR and STAI-S) with the course of the outcome pain intensity over one year were not established.

Conclusion

This investigation did not reveal an association of mechanical TS and state anxiety at baseline with pain intensity during the one-year measurement period. Pain persistence, mediated by central sensitization, is a complex mechanism that single mechanical TS and state anxiety cannot capture.

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Begleitung von Familien mit Frühchen: Eine qualitative Studie zur Erfassung der Informations- und Unterstützungsbedürfnisse von Eltern frühgeborener Kinder

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Hintergrund/Ziele

Frühgeborene Kinder weisen erhöhte Risiken für medizinische Probleme und Entwicklungsauffälligkeiten auf. Eltern sind dabei Stress und Unsicherheiten ausgesetzt, was ihre Handlungsfähigkeit und die kindliche Entwicklung negativ beeinflussen kann. Eine familienzentrierte Betreuung kann Stressempfinden reduzieren und die kindliche Entwicklung fördern. Die Integration der Elternperspektive ist dafür entscheidend, wurde jedoch in der Schweiz kaum erfasst. Ziel dieser Masterarbeit ist, Informations- und Unterstützungsbedürfnisse von Eltern frühgeborener Kinder für eine ambulante Begleitung nach Austritt aus der Neonatologie zu erfassen.

Methode

Es wurden qualitative, halbstrukturierte Leitfadeninterviews mit 12 Eltern Frühgeborener durchgeführt. Diese wurden mittels induktiver Inhaltsanalyse ausgewertet, wobei Informations- und Unterstützungsbedürfnisse der Eltern sowie Rahmenbedingungen für eine ambulante Nachbetreuung identifiziert und frühe und späte Frühgeborene verglichen wurden.

Resultate

Informations- und Unterstützungsbedürfnisse von Eltern Frühgeborener in den ersten Monaten nach Spitalaus-

tritt wurden identifiziert. Zentrale Aspekte sind Alltagswissen, elterliches Handeln bei Gesundheitsfragen, die Entwicklung Frühgeborener, Unterstützung im Familienalltag, professionelle Begleitung und medizinische Kontrollen. Im Zentrum steht die spezifische Anpassung der Angebote auf Frühgeborene. Bezüglich der Angebotskonzeption divergieren die Wünsche stark, sodass keine klare Aussage möglich ist.

Diskussion/Schlussfolgerung

Eltern Frühgeborener zeigen vielfältige Informations- und Unterstützungsbedürfnisse für eine ambulante Nachbetreuung im interprofessionellen Setting. Das grösste Defizit besteht im Bereich frühgeborenen-spezifischer Informationen und Angebote. Kinderphysiotherapeut*innen sind qualifiziert, betroffene Familien im Alltag sowie in der Frühförderung zu begleiten. Die identifizierten Themenkategorien bilden eine Grundlage für weitere Forschung im Bereich familienzentrierter Begleitung und Integration der Elternperspektive. Es wird empfohlen, bestehende Konzepte um Inhalte für Frühgeborene zu erweitern, frühgeborenen-spezifische Pilotprojekte in der Schweiz zu initiieren und deren Effektivität zu evaluieren.

Reliability and validity of the German version of the «Dyskinesia Impairment Scale, Second Edition» in children with dyskinesia

Background/ Objective

Dyskinesia is a complex and under-recognized movement disorder in children with cerebral palsy. Assessing its severity is essential before evaluating pharmacological, neuro-surgical, or rehabilitative interventions. A German assessment suitable for clinical use is currently lacking. This study examined the inter-rater and test-retest reliability, as well as the validity, of the German version of the Dyskinesia Impairment Scale, Second Edition (DIS-II). Known-groups validity was assessed using established classification systems; convergent validity was examined with the Dyskinetic Cerebral Palsy Functional Impact Scale (D-FIS).

Methods

The German version was prepared through independent translations by two native speakers and finalized by consensus. Reliability was assessed using intraclass correlation coefficients (ICC), Bland-Altman analyses, minimal detectable change (MDC), and quadratic weighted kappa (QWK). Known-groups validity was tested with the Mann-Whitney U test; convergent validity with Spearman's rank correlation.

Results

Twelve girls and ten boys (median age: 13 years and 2 months; IQR: 6y-16y 2mo) with dyskinesia participated. DIS-II total score showed excellent reliability: ICC = .98 (inter-rater), .95 (test-retest); 95 % CI [.94, .99], [.88, .98]. A change of 24 points (11 %) can be considered a true change. QWK coefficients indicated mostly substantial to almost perfect agreement. Group differences were significant. The correlation between DIS-II and D-FIS was weak ($p = 0.13$; 95 % CI = [-.43, .66]).

Discussion/ Conclusion

The German DIS-II demonstrated high reliability. However, clinical use revealed scoring challenges and notable practical limitations. Results on dyskinesia severity should be interpreted with caution, particularly in children with limited task feasibility.

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Facilitators and barriers of patients with cardiovascular disease when using the «Carity App»: A qualitative study

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Background

Digital interventions, such as mobile health apps, have shown promise in supporting long-term physical activity and exercise in patients with cardiovascular disease (CVD). The Carity App aims to promote sustained exercise behavior. However, its effectiveness and impact from the patients' perspective have not yet been thoroughly investigated.

Objective

This study aims to assess the subjective experiences of patients with CVD, focusing on the factors that facilitate or hinder adherence to the physical activity recommendations of the World Health Organization and the exercise recommendations of the European Society of Cardiology while using the Carity App.

Methods

A qualitative research design was applied, based on semi-structured interviews with 10 patients from various Swiss cardiac rehabilitation centers who had used the Carity App as part of an intervention study. Interviews, focusing on patients' experiences with the Carity App, particularly the facilitators and barriers, were analyzed using qualitative content analysis, which allowed for both deductive and inductive category development.

Results

Facilitators included continuous feedback from healthcare professionals, self-monitoring and visualizing weekly exercise goals, data transmission to a health center, focus on mental health, and intuitive usability. Barriers included lack of personalized goal-setting, insufficient feedback, limited physical activity categories, technical issues, and late patient involvement in implementation. Furthermore, insufficient communication influenced patients' self-efficacy, their understanding of exercise recommendations, perceived dosage, and their opinion about the Carity App. Self-efficacy appeared to impact particularly long-term adherence and motivation, and was partly shaped by communication quality.

Conclusion

This study shows that the Carity App offers key facilitators and barriers that may influence long-term adherence to physical activity and exercise, such as feedback from health professionals, which was seen as motivating but often insufficient. Further research should explore challenges like long-term outcomes beyond six months, usability among less tech-savvy patients, and developing reimbursable feedback systems to strengthen self-efficacy and sustained physical activity.

Akute Nackenschmerzen und Stress: Untersuchung des Zusammenhangs zwischen psychosozialen Faktoren und somatischen Beschwerden

Hintergrund

Akute Nackenschmerzen (ANS) stellen ein häufiges Beschwerdebild in der Bevölkerung dar. Neben den multifaktoriellen Ursachen rücken zunehmend auch psychosoziale Faktoren wie Stress in den Fokus der Forschung. Diese Faktoren könnten zu einer gesteigerten Schmerzempfindung und zu maladaptiven, schmerzbezogenen Verhaltensweisen führen. Ziel dieser Arbeit war es, den Zusammenhang zwischen subjektiv sowie objektiv erfasster Stresswahrnehmung und der Schmerzintensität bei ANS über einen Zeitraum von sechs Monaten zu untersuchen.

Methode

In einer prospektiven Längsschnittstudie wurden 125 Proband:innen über sechs Monate Daten durch Fragebogen und klinischen Untersuchungen untersucht. Subjektiver Stress mit dem «Stress- und Coping Inventar» (SCI) Fragebogen, objektiver Stress über das Haarcortisol und die Schmerzintensität mithilfe der Numeric-Rating Scale wurden mit deskriptiver Statistik, Korrelationen und Linear Mixed-Effects Modell (LMM) analysiert.

Resultate

Die Spearman-Korrelation ergab einen signifikant positiven Zusammenhang zwischen dem SCI-Stress und der Schmerzintensität ($\rho = 0,297$; $p < 0,01$). In den LMM zeigte sich, dass der SCI-Stress ein signifikanter Prädiktor für die Schmerzintensität nach sechs Monaten war. Mit jedem Punkt Anstieg im SCI-Stress erhöhte sich die Schmerzintensität um 0.02 Punkte auf der NRS (95 %-KI: 0.006 – 0.034). Für Cortisol konnte ein entsprechender Effekt (0.07, 95 %-KI: 0.04–0.146) nicht nachgewiesen werden.

Diskussion/Schlussfolgerung

Subjektiv wahrgenommener Stress wurde mit der Schmerzintensität bei ANS assoziiert und erwies sich als Prädiktor für die Schmerzintensität, während objektive Cortisolwerte keinen Zusammenhang zeigten. Die geringe Effektgrösse im Vergleich zur MCID weist auf limitierte klinische, jedoch wissenschaftliche Relevanz hin. Die psychosozialen Faktoren sollte systematisch erfasst und in physiotherapeutische Behandlungsansätze integriert werden.

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Quantifying Back Extensor Strength: Reliability and Validity of Isometric Dynamometry

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Background

Chronic low back pain is common, impairing quality of life and increasing health care costs. Deficits in trunk extensor strength are frequently observed, making accurate assessment essential for diagnosis and treatment monitoring. However, the validity and reliability of the Pegasus isometric dynamometer remain untested.

Methods

In this single-centre observational study, 28 healthy adults completed isometric trunk extensor strength testing with the Pegasus in two sessions one week apart. Maximum voluntary contraction (MVC) torque was measured, alongside lumbar extensor cross-sectional area (CSA) and muscle activation (EMG). Test-retest reliability was assessed via intraclass correlation coefficients (ICC). To assess construct validity, linear regression analyses were performed between CSA and MVC torque, and between EMG and torque measurements during submaximal and maximal testing. A multiple linear regression was also performed including CSA and EMG as predictors of MVC torque.

Results

An excellent ICC [1,1] of 0.93 (95 % CI: 0.88 - 0.96) was found. In separate linear regressions, both CSA and EMG significantly predicted MVC torque ($p < 0.001$). However, in the multiple regression, only CSA remained significant, explaining up to 43 % of the variance in MVC torque.

Conclusions

The Pegasus dynamometer provides reliable measurements of trunk extensor strength, with high test-retest reliability and good construct validity, particularly related to muscle CSA. While CSA significantly predicted maximal torque, EMG showed limited value in the multivariate model. These findings support the use of the Pegasus in clinical and research contexts. Further studies in patient populations and other movement planes are recommended.

Change in jump performance across the menstrual cycle: A longitudinal observational study

Objective

This study aimed to observe changes in single-leg jump performance across the menstrual cycle in moderately trained women. Unilateral performance tests are commonly used for assessing inter-limb asymmetries in healthy and injured athletes.

Method

25 naturally menstruating, ovulating, and healthy women completed the study following a two-month onboarding phase. The testing protocol included the single-leg Counter Movement Jump and the Side Hop Test. Testing was conducted during the early follicular phase, the ovulatory phase, and the assumed mid-luteal phase. Menstrual cycle phases were determined using the calendar-based counting method and urinary luteinizing hormone testing to confirm ovulation. Linear mixed models were used to analyze differences in performance parameters across menstrual cycle phases.

Results

No statistically significant differences were found across the menstrual cycle in any outcome variable on a group level: SLCMJ height ($F = 0.075$; $p = 0.928$), SLCMJ peak power ($F = 0.65$; $p = 0.522$), and Side Hop Test ($F = 0.47$; $p = 0.626$).

Conclusion

In moderately trained females, no significant variation in single-leg jump performance could be observed across the menstrual cycle. These findings suggest that the single-leg Counter Movement Jump and the Side Hop Test do not require systematic scheduling based on menstrual cycle phase in this population. Further research is needed to confirm the results of this study.

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Validity and Reliability of the Family Outcome of Early Intervention Questionnaire (FOEI): A cross-sectional study with repeated measurements

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Background/Objective

Family-centred early intervention is an established approach for infants at neuromotor developmental risk. However, there is no validated evaluation instrument that captures the multidimensional nature of family-centred care during the early phase. Therefore, the Family Outcome of Early Intervention Questionnaire (FOEI) was developed to assess care quality from the family's perspective.

Methods

This cross-sectional pilot study evaluated the FOEI's reliability and validity. Fifty-five families with children under two years at risk of neuromotor issues participated, receiving either conventional therapy or family-centred care based on COPCA (Coping with and Caring for Infants with Special Needs). Data were collected via REDCap. Test-retest reliability was examined using intraclass correlation coefficients (ICC). Construct validity was assessed through discriminative (Mann-Whitney U, Cliff's delta, simulated permutation-based p-values) and convergent analyses (Spearman correlation with the Family Empowerment Scale [FES]). Floor and ceiling effects were also analysed.

Results

Test-retest reliability was moderate (ICC = 0.58), improving to good (ICC = 0.79) after the removal of two outliers. Discriminative validity showed no significant group differences after Bonferroni-Holm correction, but descriptive trends favoured COPCA. Ceiling effects appeared in certain subscales. Correlations with the FES were low; only Hypothesis 1, which predicted a positive association between overall FOEI and FES scores, reached significance before correction.

Discussion/Conclusion

The FOEI shows promise as a valid, reliable tool for assessing family-centred early intervention. Limitations include small sample size and ceiling effects in some subscales. Further studies should refine the instrument and confirm psychometric robustness in broader populations.

Verbesserung der Sturzrisikobewertung bei geriatrischen Patient:innen – Eine explorative Studie zur Integration von IMU-Ganganalysen im Vergleich zum «Timed Up and Go»-Test

Hintergrund/Ziele

Der zunehmende Anteil der älteren Bevölkerung geht mit einem deutlichen Anstieg sturzbedingter Ereignisse einher – jährlich werden etwa 90.000 Stürze bei Personen ab 65 Jahren dokumentiert. Diese sind häufig mit Hospitalisationen und hohen Gesundheitskosten verbunden. Eine frühzeitige Identifikation sturzgefährdeter Personen ist daher ein zentrales Ziel der geriatrischen Versorgung. Der Timed-Up-and-Go-Test (TUG) ist ein etabliertes Verfahren zur Einschätzung von Mobilität und Sturzrisiko, seine prognostische Aussagekraft wird jedoch zunehmend kritisch diskutiert. Technikgestützte Assessments wie instrumentierte Ganganalysen mit Trägheitssensoren (IMUs) ermöglichen die objektive Erfassung spatiotemporaler Gangparameter und finden zunehmend Anwendung im klinischen Alltag. Die vorliegende Studie untersucht den Zusammenhang zwischen Gangparametern und der TUG-Zeit sowie deren Potenzial zur Unterscheidung zwischen Personen mit und ohne dokumentiertes Sturzereignis.

Methode

Diese explorative Studie untersuchte 30 geriatrische Rehabilitationspatient:innen mithilfe des TUG-Tests und einer zweiminütigen instrumentierten Ganganalyse mit IMUs. Zur Erhebung von Sturzereignissen wurde ein

Anschluss über drei Monate ein Sturzkalendar geführt. Die Datenerhebung erfolgte querschnittlich zur Prüfung von Zusammenhängen zwischen den erhobenen Parametern sowie prospektiv im Hinblick auf dokumentierte Stürze.

Resultate

Es zeigten sich moderate bis starke Korrelationen zwischen der TUG-Zeit und mehreren Gangparametern, insbesondere der Ganggeschwindigkeit, der Schrittlänge und der Doppelstützphase. Im dreimonatigen Follow-up wurden drei Stürze dokumentiert. Ein Vergleich der Gangparameter zwischen sturzbetroffenen und sturzf freien Teilnehmenden ergab keine auffälligen Unterschiede; zentrale Tendenzen und Streuungen überlappten weitgehend.

Diskussion/Schlussfolgerung

Die Gangparameter korrelieren mit der TUG-Zeit, erlauben jedoch keine verlässliche Einschätzung des Sturzrisikos. Aufgrund der kleinen Stichprobe sind die Ergebnisse nicht generalisierbar. Weitere Studien sind erforderlich.

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Überprüfung der Übereinstimmung von Physiotherapeut:innen untereinander und im Vergleich zu ärztlichem Fachpersonal zur Indikation einer physiotherapeutischen Behandlung im Akutspital – Eine Pilotstudie

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Hintergrund

Der Direktzugang zur Physiotherapie ist ein aktuelles Thema. Inspiriert von diesem Modell prüft die Physiotherapieabteilung des Universitätsspitals Basel die Möglichkeit, den Aufgabebereich stationärer Physiotherapeut:innen im akutmedizinischen Bereich zu erweitern. Um die Versorgung der Patient:innen zu gewährleisten, muss sichergestellt werden, dass die Patient:innen mit gleicher Wahrscheinlichkeit eine Physiotherapie erhalten, unabhängig davon, wer die Indikation für Physiotherapie stellt. Das Ziel dieser Studie war es, Pilotdaten zur Übereinstimmung der Entscheidung über die Indikation einer physiotherapeutischen Behandlung unter Physiotherapeut:innen und im Vergleich zu ärztlichem Fachpersonal zu analysieren, sowie die Evaluation des entwickelten Studienprotokolls.

Methode

Zur Überprüfung der Übereinstimmung der Entscheidung, wurde die Verordnung für Physiotherapie verwendet. Ein Fragebogen diente der Erfassung von Evaluationskriterien des Studienprotokolls, ergänzt durch Interviews mit den Physiotherapeut:innen. Die Berechnung der Übereinstimmung der Physiotherapeut:innen untereinander erfolgte anhand der Interrater-Reliabilität (Cohen's Kappa (κ)). Die Übereinstimmung

zwischen den Physiotherapeut:innen und dem ärztlichen Fachpersonal anhand der Kriteriumsvalidität (Sensitivität, Spezifität).

Resultate

Die Analyse der Evaluationskriterien erfolgte an 30 Fällen, die der Interrater-Reliabilität an 21 Fällen und die der Kriteriumsvalidität an 25 Fällen. Physiotherapeut:in A und B zeigten untereinander eine moderate Übereinstimmung (76.19 %, $\kappa=0.49$, CI: 0.13–0.86). Die Analyse der Übereinstimmung zwischen Physiotherapeutin B und dem ärztlichen Fachpersonal zeigte eine Sensitivität von 0.86 (CI: 0.57–0.98) und eine Spezifität von 0.63 (CI: 0.32–0.88). Das Studienprotokoll konnte wie geplant umgesetzt werden.

Schlussfolgerung

In dieser Pilotstudie konnte an einer kleinen Stichprobe eine moderate Übereinstimmung zwischen Physiotherapeut:innen und eine gute Sensitivität in der Übereinstimmung zwischen Physiotherapeut:innen und ärztlichem Fachpersonal gezeigt, sowie Optimierungspotenziale im Studienprotokoll identifiziert werden.

Exploring stakeholder needs and perspectives on opportunities and risks of advanced practice physiotherapy at a psychiatric hospital in Switzerland: A qualitative descriptive study

Introduction

Despite the growing evidence supporting advanced practice physiotherapy roles, there is limited knowledge about their implementation in mental health care.

Objective

To explore stakeholder needs, as well as perceived opportunities and risks associated with the development of an advanced practice physiotherapy role at the University Hospital of Psychiatry Zurich.

Methods

A qualitative descriptive study was conducted using semi-structured focus groups and individual interviews. Guided by the PEPPA framework, the study included health care professionals, health care leaders, and individuals with lived inpatient experience. Data from audio recordings were transcribed verbatim and analyzed using inductive qualitative content analysis.

Results

Thirty-six stakeholders, the majority of whom were professionals, participated in the study. Content analysis yielded three main categories of

needs: (1) Direct patient care, focusing on the physical health of inpatients and outpatient follow-up treatments; (2) Advanced practice physiotherapy role profile, outlining specific requirements for this role; and (3) Process and resource management, addressing access and delivery of physiotherapy services and interprofessional collaboration. Stakeholders viewed advanced practice physiotherapy as an opportunity to enhance the quality of care, but also recognized potential risks, including resistance from other professionals, conflicts arising from an unclear role definition, and concerns about insufficient quality assurance of care provided by the advanced practice physiotherapist.

Conclusion

Stakeholders recognized the advanced practice physiotherapist as a key contributor to addressing both patient-related and hospital-related challenges. Successful implementation will require prioritizing these needs and developing a clearly defined advanced practice physiotherapy role through stakeholder consensus.

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Parental attitude towards chiropractic intervention before and after treatment in infants with an arthrogenic torticollis: An explorative qualitative study

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Background

Arthrogenic torticollis (AT) in infants is a common health issue that leads parents to seek medical advice and consider therapeutic interventions, including chiropractic care. Whilst such manual treatments are occasionally recommended, they are often unfamiliar and may evoke mixed feelings. Little is known about how parental attitudes towards chiropractic treatment evolve over time and what shapes their experiences and expectations. We explored the development of parental attitudes towards chiropractic treatment for infants with AT and identified factors influencing these attitudes.

Methods

In this qualitative study, 12 families who were referred to chiropractic care were recruited. Their infants were on average 3.92 (SD 1.26) months of age and were diagnosed with AT. 12 semi-structured interviews were conducted at baseline, of which seven parents completed the follow-up interviews. Data was explored within the research team and analysed using qualitative content analysis in MAXQDA 24, following Kuckartz's approach. The study was reported in accordance with the COREQ checklist.

Results

Parents initially experienced uncertainty and emotional strain due to unfamiliarity with chiropractic care and the challenge of seeing their infant undergo manual treatment. Over time, observing improvements in their infant's condition and becoming familiar with the process increased their confidence, trust in professionals, and acceptance of the treatment. Key factors shaping attitudes included clear communication, observable benefits, family support, and prior experience with therapeutic interventions.

Discussion/Conclusion

Parental attitudes towards chiropractic care evolved from initial uncertainty to greater confidence and acceptance as they observed benefits and gained trust in the process. Clear communication and guidance can support positive engagement with unfamiliar treatments and reduce stress for families during their infant's care.

Inflammatory Arthritis Facilitators and Barriers (IFAB) Questionnaire for Physical Activity: Cross-cultural adaptation into German followed by a reliability study

Background

Axial spondyloarthritis (axSpA) is a chronic rheumatic disease, primarily characterized by inflammatory back pain and progressive functional limitations. Physical activity (PA) and exercise are essential parts of managing axSpA, yet the European Alliance of Associations for Rheumatology (EULAR) recommendations for PA are rarely achieved. The Inflammatory Arthritis Facilitators and Barriers (IFAB) Questionnaire is a measurement tool for PA-related facilitators and barriers in rheumatic diseases. Until now, no adapted German version has been published. Therefore, this study aimed to culturally adapt the IFAB into German (IFAB-G) and assess its reliability among individuals with axSpA from the German-speaking part of Switzerland.

Methods

The IFAB was initially translated using the TRAPD method (Translation, Review, Adjudication, Pretest, Documentation), involving experts and participants from Austria, Switzerland and Germany. For the second phase a cross-sectional study in a test-retest design was conducted, including statistical reliability analysis of internal consistency, the intraclass coefficient (ICC), the standard error of measurement (SEM), the minimal detectable change (MDC),

floor and ceiling effects and the limits of agreement (LOA) for the IFAB-G. Data were collected via an online survey.

Results

The IFAB was successfully translated into the German language. Minor adjustments were required during translation and adaptation. For test-retest reliability 55 individuals with axSpA were statistically analyzed. Internal consistency was calculated using Cronbach alpha ($\alpha = 0.64$), indicating a satisfactory internal consistency. Relative test-retest reliability was calculated using ICC = 0.72 [95 % CI 0.57; 0.83], signifying a moderate level of agreement, with the SEM to be 8.56 while MDC was determined at 23.75. No floor or ceiling effects were observed in the global scores. The differences between baseline and retest total scores fell, apart from two, within the LOA.

Conclusion

This study demonstrates that the IFAB-G is a reliable instrument for identifying barriers and facilitators of PA, thereby contributing to optimize disease management in axSpA. With minimal missing values and a completion time of less than 5 minutes it is suitable in both clinical settings and research studies.

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A repeated measures study on the relationship between standing stability and stability while walking in children with cerebral palsy

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Background

Children with cerebral palsy (CP) have impaired postural control, affecting standing and walking stability. While both are commonly assessed in physiotherapy, it remains unclear whether they are functionally related or reflect separate control mechanisms.

Objective

This study examines the relationship between standing and walking stability in children with CP and explores its clinical implications.

Methods

Twenty-one children with spastic CP (GMFCS I–II) participated in a repeated-measures study. Standing stability was assessed barefoot, using force-plate measures of centre of pressure (CoP) for 60 seconds. Walking stability was evaluated using 3D motion capture during barefoot gait trials, extracting parameters including whole-body angular momentum (WBAM), margin of stability (MoS), and gait variability. Pearson and Bayesian correlations between standing and walking parameters were calculated.

Results

Moderate correlations were observed between standing stability and medio-lateral gait parameters, particularly stride width variability ($r = 0.64$; $BF_{10} = 15.49$) and transverse WBAM ($r = 0.55$; $BF_{10} = 4.91$). Other relationships were weak or inconsistent, and most Bayes factors indicated only anecdotal to moderate evidence.

Discussion

The results suggest a partial relationship between standing and walking stability, particularly in the medio-lateral direction. Moderate to strong associations between stride width variability and transverse WBAM could reflect compensatory strategies, although limited evidence in other planes requires cautious interpretation.

Conclusion

Standing stability alone does not reliably predict walking stability. Physiotherapy should assess both domains separately. Further studies with larger, more diverse samples are needed to confirm these findings.

Sensitivity and Specificity of the Hypoxic Ventilatory Response Test Predicting Acute Mountain Sickness at 3600 m: A Gender-Based Analysis

Background

Over 100 million individuals ascend to altitudes above 2,500 meters annually, increasing their risk of acute mountain sickness (AMS). Although several predictors exist, reliable diagnostic tools remain limited. The hypoxic ventilatory response (HVR) test shows promise but is methodologically underexplored.

Objective

This study evaluated the diagnostic accuracy of the HVR test for AMS, considering age and sex.

Methods

Healthy participants (18–44 years, BMI 18–30 kg/m²) completed baseline assessments, including the HVR test, at 700 m. AMS symptoms were assessed using the 2018 Lake Louise Score and AMS-c questionnaire. Receiver operating characteristic analyses were used to evaluate hypoxic cardiac and ventilatory responses at rest and during exercise for predicting AMS. The Youden index identified optimal cutoffs. A generalized linear model determined the best predictor combinations.

Results

Among 60 participants (22 males, 38 females), AMS occurred in 36.7 % and was more common in women (47.4 % vs. 18.2 %). Severe AMS (13.3 %) affected only women. HCR_e and HVR_e demonstrated diagnostic accuracy in predicting AMS. The best overall model combined HCR_r, HCR_e, and HVR_r (AUC = 0.83), with the highest accuracy observed in women (AUC = 0.86). In men, HVR_e and HCR_e showed the best diagnostic performance (AUC = 0.85).

Conclusion

The HVR test shows strong potential as a predictive tool for AMS, with highest accuracy observed in women. While promising, its clinical application is limited by technical requirements. Further research should validate cutoff values in diverse populations and explore sex-specific physiological factors.

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Informal Caregivers in Focus: Addressing Educational Needs and Technological Solutions to Support Stroke Caregivers in Switzerland

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Background

People with stroke often experience long-term impairments, placing substantial demands on often unprepared informal caregivers. In Switzerland, support services are limited by geographic barriers, inconvenient timing, or insufficient adaptation to informal caregivers' specific needs. This study aimed to quantify the educational needs of informal stroke caregivers across Switzerland and to identify the preferred content areas and delivery methods for a Swiss-contextualized Massive Open Online Course (MOOC).

Methods

A cross-sectional, descriptive-exploratory national online survey was conducted from October 2024 to April 2025. Participants (n = 35) were unpaid caregivers providing weekly support and fluent in German, French, or Italian. A REDCap survey covered demographics, care burden, informational needs and technology acceptance. Descriptive statistics, frequency distributions, Spearman's correlations and thematic analysis of openended responses were performed.

Results

Mean caregiver age was 54.9 years (SD 16.1); 82.8 % were female. Most

(75 %) reported «severe to very severe» burden of care. Perceived involvement in rehabilitation and satisfaction with that involvement were positively correlated ($\rho = 0.63$; 95 % CI: 0.21, 0.86; $p = 0.002$). Overall, 67.3 % wanted more information. Top educational needs concerned personality changes (100 %), depression (90 %) and practical daily-management tips (87.5 %). Preferred timing for the delivery was pre-discharge (61.9 %). Desired resources included emotional/care counselling (31.4 %) and online self-paced courses (28.6 %). Favored formats were text-based (40 %) and video (37.1 %). Educational technology was rated easy to use (mean = 5.29; SD 1.52) but only moderately useful (mean = 4.05; SD 1.12).

Conclusion

Despite a modest sample size, findings reveal marked gaps in psychological and cognitive knowledge and support the need for early, flexible, digital education. Tailoring content to these needs may boost caregiver resilience. Swiss informal stroke caregivers prioritize psychological, cognitive and daily-management information delivered pre-discharge via text or video in a self-paced MOOC. The next step: evaluate its impact on caregiver outcomes.

Physiotherapists' Perspectives on Barriers to Participation in the GLA:D® Programme for Hip and Knee Osteoarthritis: A Delphi Study

Background/Objective

Knee and hip osteoarthritis (OA) are among the most prevalent chronic joint conditions worldwide. International guidelines recommend education and exercise therapy as first-line treatments. The GLA:D® programme, translates these recommendations into a structured group-based intervention. Some patients experience barriers which hinder participation in group therapy. This Delphi study aimed to identify an expert consensus on certified GLA:D® physiotherapists perceived barriers that may hinder patients' participation in GLA:D®.

Methods

GLA:D®-certified physiotherapists from Switzerland were invited to participate in a three-round standard Delphi survey. The survey contained 69 items (49 original and 20 suggested by participants), which were rated using a binary Likert scale. The items were assigned to five domains. The consensus level was defined as 70 %.

Results

Of 196 physiotherapists, 39 completed all three Delphi rounds. Consensus was reached in 19 of 69 barriers (27.5 %). The highest consensus rates were observed in the domains mental (54 %) and system-level (29 %), followed by cognitive (27 %), physical (22 %), and social (8 %). The top barriers (88.7 %) were «lack of motivation» and «negative attitude towards movement».

Conclusion

This Delphi study explores how certified physiotherapists in Switzerland perceive barriers to implementing and participating in the GLA:D® programme for hip and knee osteoarthritis. Findings reveal, that mental, physical, and motivational factors play a key role in limiting patient engagement. The results highlight the importance of early identification of individual barriers and support the need for more tailored, patient-centred approaches to improve uptake and bridge the evidence-practice gap.

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The Use of the «HomeTrain» App in the Context of Physiotherapy as Support for Training at Home for People with and without Mild Cognitive Impairments

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Background /Objective

Mild cognitive impairment (MCI) is characterized by a decline in cognitive function. Regular physical activity can help elderly individuals to slow down the progression of MCI. To support this, a mobile training application called «HomeTrain» was created based on international exercise recommendations. The aim of the study is to evaluate the application. The research question is as follows: What is the level of usability, usefulness and acceptance of the «Home-Train» app from the perspective of physiotherapists and people with or without MCI?

Methods

A usability study was conducted using two standardized questionnaires and supplementary questions. Usability tests were carried out in the designated test field. The study included 12 physiotherapists and 12 elderly individuals with and without mild cognitive impairment.

Results

The physiotherapists had a lower SUS score than the elderly individuals with MCI and the elderly individuals without MCI had the highest score. The physiotherapists also had the lowest but the least diverging UEQ scores, while elderly individuals with MCI had the highest values but also the highest variance and the elderly without MCI were in between. The usability tests also contributed to the overall positive assessment of the application.

Discussion/Conclusion

The «HomeTrain» application's utility is demonstrated by its integrated functions and two interfaces, making it a simple and useful tool for physiotherapy practice, especially as digital devices become more prevalent among the elderly. However, its user interface is sometimes perceived as complex, suggesting simplification and further optimization for enhanced usability.

Comparison of hip abduction and adduction strength, using handheld versus fixed dynamometry with simultaneous surface EMG measurements in healthy adults – A Validity and Reliability Study

Objective

To assess the validity (criterion and construct) and reliability (inter-session and inter-tester) of hand-held dynamometry (HHD) compared to fixed-frame dynamometry (FFD) for isometric hip abduction (ABD) and adduction (ADD) strength testing, in healthy subjects.

Design

Validation and reliability study involving two testing sessions.

Participants

Thirty healthy adults (15 women, 15 men) engage in regular strength training.

Main Outcome Measures: Maximal unilateral isometric hip ABD and ADD strength measured with HHD and FFD (side-lying position), and corresponding EMG activity of agonist, antagonist and synergistic muscles on both sides.

Results

Despite good agreements between methods ($ICC > 0.90$), HHD resulted in higher hip ABD (13 %) and hip ADD (16 %) strength compared to FFD ($p < 0.001$), without equivalent differences in EMG activity for the different muscles ($p > 0.09$). Inter-session reliability was acceptable for both methods and muscle groups ($ICC: 0.74-0.85$), though lower for HHD. Inter-tester reliability of HHD was excellent for both muscle groups ($ICC > 0.92$).

Conclusions

HHD consistently overestimated hip ABD and ADD strength compared to FFD, likely due to tester-related influences. Test-retest reliability of HHD was acceptable but showed greater variability. Therefore, FFD is recommended for valid and reliable assessments of hip muscle strength in clinical settings.

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Convergent validity of the Fremantle Back Awareness Questionnaire and tactile perception methods in individuals with chronic low back pain

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Background/Objective

Altered body perception is commonly observed in individuals with chronic low back pain (CLBP) and may influence pain experience and somatosensory processing. The Fremantle Back Awareness Questionnaire (FreBAQ) captures cognitive aspects of body perception, while tactile acuity measures like two-point discrimination (TPD) and two-point estimation (TPE) assess sensory aspects of perception. Convergent validity of the FreBAQ with TPD and TPE was evaluated in individuals with CLBP. Secondary analyses explored associations between pain intensity, pain duration, and tactile perception.

Methods

In this cross-sectional study, 35 participants with CLBP completed FreBAQ, TPD, and TPE assessments. Pain intensity and duration were also recorded. Linear mixed models and correlation analyses examined associations between FreBAQ scores, tactile perception, and pain-related variables. Analyses accounted for multiple covariates, including stimulus orientation, participant characteristics, and pain measures.

Results

No significant correlations were found between FreBAQ scores and either TPD or TPE values, suggesting limited convergent validity. Pain intensity and duration were not significantly associated with tactile outcomes. Age was predictive of TPD thresholds, and orientation effects were evident for both TPD and TPE.

Discussion/Conclusion

Findings suggest that the FreBAQ and tactile acuity measures capture distinct components of perception in individuals with CLBP. While no evidence of convergent validity was found, age and stimulus orientation were significant predictors of tactile performance. These results highlight the value of multidimensional assessment and support the combined use of cognitive and sensory tools in clinical and research contexts, with particular attention to orientation effects in tactile acuity testing.

The change in motivation for functional sport performance tests across the menstrual cycle in naturally menstruating persons

Background/Objective

To date, motivational changes across menstrual cycle phases in the context of functional performance testing remain insufficiently explored, with prior research often employing inconsistent definitions of cycle phases. This study aimed to examine changes in motivation for functional performance tests between menstruation, post-ovulatory phase and assumed mid-luteal phase in naturally menstruating individuals.

Methods

Twenty-five women (age 28.44 ± 4.35 years, weight 65.35 ± 10.68 kg, menstrual cycle length 28.8 ± 3.55 days) participated. Motivation was assessed using a single-item-question, the Intrinsic Motivation Inventory (IMI) and the Positive and Negative Affect Schedule (PANAS). Data were analysed using linear mixed models.

Results

No statistically significant changes in motivation across menstrual cycle phases were found using the single-item question ($F = 0.20$, $p = .818$), PANAS positive affect ($F = 0.55$, $p = .577$), PANAS negative affect ($F = 0.33$, $p = .719$) or interest/enjoyment subscale of IMI ($F = 1.56$, $p = .216$). A statistically significant change in motivation across menstrual cycle phases was found in overall IMI score ($F = 3.77$, $p = .026$), with post-hoc comparisons revealing a statistically significant difference between post-ovulatory phase and assumed mid-luteal phase (estimated difference = 0.18, SE = 0.07, $p = .043$).

Discussion/Conclusion

Although a statistically significant change was found in IMI scores, it may not be clinically meaningful. Visual inspection of data suggested high inter- and intra-individual variability across menstrual cycle phases and cycles. Monitoring both menstruation and motivation may provide deeper insights into performance variability at the individual level.

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Is an Evidence-Based Multicomponent Intervention to Reduce Workplace Sedentary Behavior in University Employees Acceptable, Appropriate, Feasible, and Usable? An Explanatory Sequential Mixed-Method Approach

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Background/Objective

Sedentary behavior is associated with elevated chronic disease risk, with university employees being a particularly sedentary at-risk population. The study aimed to evaluate the components of an adapted, evidence-based multicomponent sedentary behavior intervention in terms of acceptability, appropriateness, feasibility, and overall usability among university employees and explores the reasons behind the effectiveness of specific components. Secondary outcomes focused on sedentary behavior indicators.

Methods

The intervention comprised four strategies and ten elements. Nineteen participants took part in the study, with ten being interviewed. A mixed-method approach was used.

Results

Of ten components nine were rated as appropriate and feasible, three as acceptable. The overall usability score was 71.71 (SD $\pm$ 18.52). Participants rated the intervention important, with the height-adjustable desk and team motivation as key components. Secondary outcomes in means (95 % confidence interval) were: pre-intervention sitting time 7.72

hours (7.15-8.29) at work and 3.18 hours (2.56-3.79) during leisure time, post-intervention sitting time 6.37 hours (5.76-6.98) at work and 2.64 hours (2.32-2.95) during leisure time, pre-intervention number of active breaks per workday 5.84 (4.63-7.05), with an average duration of 163 seconds (110-216), post-intervention number of active breaks 7.26 (5.66-8.86), with an average duration of 190 seconds (108-272).

Discussion/Conclusion

The results are promising regarding the component's appropriateness, feasibility, overall usability, and impact on sedentary behavior indicators. Having multiple components appears to be essential. However, due to the small sample size, the results must be interpreted with caution. Future research should focus on optimizing this multicomponent intervention and examining its long-term effectiveness in a larger population.

Induction of Lucid Dreams through Virtual Reality Training and Haptic Stimulation

Background

How lucid dreaming (LD) is reliably induced has not been conclusively clarified. Promising methods include cognitive techniques, external stimulation and pharmacological interventions. However, their effectiveness is influenced by various factors. New technologies, such as virtual reality (VR), offer additional possibilities for research. This study investigated the effect of VR training and haptic stimulation (HS) on the induction of LD.

Methods

A within-subject morning sleep design was conducted. Each participant completed two morning sleep sessions in the sleep laboratory – one with vibrating HS and one without. Each session was preceded by VR training with reality checks, conducted either with or without HS, depending on the condition. Polysomnography was used to classify sleep stages and detect Left-Right-Left-Right (LRLR) eye signals. Following each session, participants completed the Dream Lucidity Questionnaire (DLQ).

Results

Results showed significantly higher DLQ scores in the VR condition compared to VR+HS ($p = .047$, $W = 151.5$). The LRLR signal did not differ significantly between conditions ($p = .125$, $OR = 0.17$). The stronger VR effect may be due to a sequence effect, as VR was always used first. The non-significant LRLR result may be due to the limited sample size and the binary nature of the outcome, which may be less sensitive than DLQ scores.

Conclusion

Overall, VR induction aligns with the findings by Gott et al. (2021), suggesting VR as a promising method for inducing LD. Future studies should confirm these findings with larger samples while addressing potential sequence effects.

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The TeleRehaStroke project: Feasibility of a telerehabilitation intervention in transition from inpatient to outpatient care after stroke

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Background/Objective

A stroke is a big burden for patients and the Swiss health care system. Therapy and exercise can help patients regain their functional independence and reduce symptoms. Telerehabilitation is an option to reduce personnel and financial resources and still provide adequate therapy with high exercise frequency and training intensity. The TeleRehaStroke-project aims to develop an application for mobile devices to deliver adequate telerehabilitation in the subacute phase after a stroke.

Methods

This is a feasibility study to test the feasibility of the TeleRehaStroke-program. Patients were recruited in the Reha Rheinfelden and were introduced to the app during inpatient care. During inpatient care, they were introduced to the TeleRehaStroke-application, instructed on how to use it and practiced with it. After discharge, they used the application, and returned to the Reha Rheinfelden after 12 weeks, to evaluate the program. During their outpatient training, the app collected data on their training adherence. The program is evaluated on sample size, recruitment rate, drop-out rate, adherence, stability, safety, usability (System Usability Scale) and acceptance (Net Promoter Score). Feasibility is analyzed by

comparing the mean scores of each criterion to a pre-set cut-off-score for each criterion.

Results

21 patient-datasets have been analyzed in this study. Participants were in the first half of the subacute phase, once they started the program. Three of the feasibility criteria were not met, namely drop-out-rate, adherence and safety.

Discussion/Conclusion

The TeleRehaStroke-program must be adapted to meet the needs of stroke patients.

Association of fluctuating female sex hormones with gluteus medius strength and activation during cutting maneuvers and drop jumps in female recreational athletes

Objectives

Women are at increased risk of anterior cruciate ligament injury and hormonal fluctuations during the menstrual cycle have been proposed as a potential contributing factor. Evidence linking hormonal variation to neuromuscular control remains limited. Given the protective role of the gluteus medius in frontal plane knee stability, this pilot study aimed to investigate associations between sex hormone concentrations and gluteus medius activation and strength.

Methods

Luteinizing hormone, estradiol, and progesterone from ten eumenorrheic women (age 24.2 ± 4.73 years, training volume 407 ± 183.91 min/week) were measured once during the menstrual, preovulatory, and ovulatory phases. Gluteus medius electromyography was recorded during unilateral and bilateral drop jumps and a cutting task to assess peak activity, timing, and onset. Isometric hip abductor strength was measured. Linear mixed models were fitted for each outcome with hormone concentrations as fixed effects.

Results

Increasing estradiol was significantly associated with increased peak activity during bilateral drop jumps ($\beta = 0.15$ % MVIC per pg/ml, $p = 0.02$), with a non-significant trend observed during the cut ($\beta = 0.20$ % MVIC per pg/ml, $p = 0.11$). Progesterone showed associations approaching significance with peak timing in all tasks (cut: $\beta = 2.82$ ms per ng/ml, $p = 0.08$, drop jump unilateral: $\beta = -3.23$ ms per ng/ml, $p = 0.07$, drop jump bilateral $\beta = -5.01$ ms per ng/ml, $p = 0.08$).

Conclusion

This study provides initial indication for hormone-related modulation of gluteus medius activity. Future research should include the luteal phase, larger samples, and model hormonal interactions. Clinical implications remain uncertain, as menstrual cycle phases associated with increased injury risk do not clearly align with neuromuscular findings.

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Perturbation-based Balance Training in Older Adults. Effect of a Single Session and Associations with Fear of Falling, Balance Confidence, Physical Activity and Timed up and Go-Test

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Background/Objective

Falls are a major cause of morbidity and mortality among older adults, with around 37.3 million requiring medical attention annually. They often result in physical, psychological, and social consequences. Task-specific fall prevention programs like perturbation-based balance training (PBT), are promising approaches. This study examines the short-term effects of a single PBT session on reactive balance in older adults and explores associations with self-reported fear of falling, balance confidence, physical activity, and Timed Up and Go (TUG) performance.

Methods

In this analysis, 43 able-bodied participants were randomly allocated into an intervention and a control group. The intervention group received perturbations integrated during walking trials on a treadmill, while the control group walked without perturbations. Pre- and post-intervention assessments were conducted to evaluate recovery steps (RS) for reactive balance, alongside assessments (short IPAQ, short FES-I, ABC-D and TUG)

Results

A single session of PBT can produce short-term improvements in reactive balance, as indicated by a statistically significant reduction in RS within the intervention group. The control group showed no significant change. No statistically significant associations were found between the RS and the outcome measures from the questionnaires and the TUG.

Discussion/Conclusion

PBT improves short-term reactive balance in older adults and appears to be a promising strategy for fall prevention. However, further research on long-term effects, optimal dosage and suitable outcome measures is needed before clinical implementation.

Ceiling effects in the short FES-I and ABC-D, along with the limited scope of the short IPAQ, may account for the lack of observed associations.

Keep moving? Physical activity levels in people with psychiatric disorders during hospitalization and one month after discharge

Background

Individuals with mental disorders often suffer from poorer physical health compared to the general population and have an increased risk for obesity, diabetes, and cardiovascular disease. These comorbidities often result from physical inactivity, dietary habits, and side effects of antipsychotics. Regular physical activity improves mental well-being and can serve as an adjunct treatment for mental disorders.

Methods

This study investigated the physical activity of patients at the Psychiatric University Hospital Zurich before and after discharge. Using the Global Physical Activity Questionnaire (GPAQ), the activity levels of ten participants were measured.

Results

At discharge, 80 % of the participants met the WHO-recommended level of 600 MET-minutes per week. One month after discharge, this proportion dropped to 71.4 %, with average activity decreasing from 3,314 to 909 MET-minutes per week. Interestingly, sedentary behavior decreased after discharge.

Discussion/Conclusion

The small sample size limits the generalizability of these findings. Overall, the study indicates that physical activity among patients with mental disorders was higher during hospitalization but declined following discharge, underscoring the importance of additional support to promote long-term health outcomes. Further research with larger cohorts is needed.

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Funktionelle Knie-Assessments im Exergaming: Welche Variablen der Biomechanik bilden die Basis für die physiotherapeutische Beurteilung?

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Knie- und Sprunggelenksverletzungen zählen im Teamsport zu den häufigsten Unfällen. Die Rückkehrzeiten zum Sport und das hohe Risiko erneuter Verletzungen bleiben jedoch trotz etablierter Behandlungsguidelines unbefriedigend. Exergaming bietet diesbezüglich neue rehabilitative Ansätze, beispielsweise den ExerCube. Die Rehabilitationsspiele beinhalten allerdings noch keine Einstufungstests oder Verlaufskontrollen. Ziel dieser Arbeit war es, biomechanische Variablen zu identifizieren, welche die physiotherapeutischen Bewertungen des Y-Balance und Side Hop Tests am besten erklären. Auf diese Weise sollen in Zukunft funktionelle Assessments im ExerCube integriert und für die Rehabilitation genutzt werden können.

Methode

In einer explorativen Querschnittsstudie wurden mittels Motion Capture Bewegungsdaten von 20 sportlich aktiven Personen (10 verletzt / 10 gesund) erhoben, während sie den Y-Balance Test und den Side Hop Test absolvierten. Zwei Physiotherapeuten bewerteten die Testausführungen anhand modifizierter Likert-Skalen. Es wurden Korrelationen und lineare Modelle zur Erklärung der Bewertungen durch biomechanische

Variablen erstellt und die Übereinstimmung der Physiotherapeuten mittels Intraklassen-Korrelation und Wilcoxon-Test analysiert.

Resultate

Im Y-Balance Test erklärten der Vorfuss des Spielbeins, Knie-Adduktion/Abduktion sowie die mittlere Geschwindigkeit des Knies die Bewertungen am besten. Im Side Hop Test erwiesen sich die Vorfüsse beider Beine und die Knie-Adduktion/Abduktion als einflussreichste Variablen. Intraklassen-Korrelationen zeigten eine mehrheitlich schlechte bis moderate Interrater-Reliabilität, jedoch signifikante Bewertungsunterschiede im Wilcoxon-Test (Bias).

Diskussion/Schlussfolgerung

Die Ergebnisse zeigen, dass Markerbasierte Bewegungsanalysen physiotherapeutische Bewertungen teilweise gut erklären können. Sie bilden damit eine potenzielle Grundlage für funktionelle Assessments im Exergaming. Weitere Forschung mit grösseren Stichproben ist notwendig, um verbleibende Messprobleme zu lösen, die Validität zu erhöhen und technische Anwendungen in der klinischen Praxis zu etablieren.

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