Gesundheit

Abstracts 2024
Master of Science in Physiotherapie

Masterarbeiten
Projekte aus Fachentwicklung und Forschung

Liebe Leser:innen

Der diesjährige Abstractband des Studienjahrgangs MScPT21 enthält kombiniert die Abstracts der Masterarbeiten und die Abstracts der Transfermodule mit Forschungs- und Fachentwicklungsprojekten. Die Studierenden haben ihr Wissen und ihre Skills aus den Studienjahren in diversen Kliniken und Forschungsinstitutionen in der Schweiz angewendet und vertieft. Sehr vielfältige, methodisch sorgfältig verfasste und spannende Projekte sind dabei entstanden.

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Den MScPT Absolvierenden gratulieren wir herzlich zu ihren gelungenen Masterarbeiten und Projekten aus den Transfermodulen! Ein grosser Dank geht an unsere Dozierenden und Supervisor:innen, die all das ermöglicht haben!

Wir wünschen Ihnen viel Lesevergnügen!

Lea Hegglin, MSc
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MSc in Physiotherapie

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MSc in Physiotherpie

Abstracts von Masterarbeiten

Abstracts von Projekten aus Fachentwicklung und Forschung

Masterarbeiten
Abstracts 2024

Master of Science in Physiotherapie

Evaluating the Effects of Percussion Therapy on Thigh Perfusion Using Theragun™: A Repeated Measures Study

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Introduction

In recent history the use of passive recovery strategies like percussion therapy increased. Percussion therapy is administered using devices like massage guns, which apply percussions in high frequencies onto the targeted tissue. Possible physiological effects are investigated sparsely. The present study aims to examine both objective and subjective perfusion parameters of a one-time percussion therapy application.

Material and Methods

22 healthy volunteers (mean age 24.2 ± 3.03 years, mean body-fat 25.3 ± 8.7 %) were enrolled in this study and randomized into two groups of two and four minutes of intervention respectively. After 15 minutes of acclimatisation, baseline-measurements were carried out, followed by a standardised percussion therapy intervention of the ventro-lateral thigh. Hereinafter, follow-up measurements were taken in a five-minute interval up to 40 minutes post-application. Friedman Test and repeated measures ANOVA were used in statistical analysis.

Results

Statistically significant time effects for a singular percussion therapy application were shown in all three investigated parameters. Post-hoc analysis demonstrated effects for muscle microcirculation to be relevant for 15 minutes post application ($p < 0.01$) and effects on muscle oxygen saturation to last over the examined timeframe ($p < 0.001$). Participants' perceived perfusion increased in the first ten minutes ($p < 0.001$) and showed a return to baseline starting at 30 minutes after the intervention.

Discussion

A one-time percussion therapy increases muscle microcirculation, muscle oxygen saturation and participants' perceived perfusion. The effect on muscle oxygen levels stayed the longest while perceived perfusion returns to baseline after 30 minutes. This is the first study to incorporate participants' perceived parameters.

Feasibility of a motor-cognitive step-training program during acute hospitalization in patients with traumatic brain injury

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Background

Traumatic brain injurie (TBI) survivors often experience mobility issues, including difficulty walking due to impaired motor skills such as gait stability and balance, which are further worsened by cognitive deficits. Motor-cognitive dual-task training has shown promising effects in people with TBI. The novel training concept «StepIt» aims to address motor and cognitive aspects related to falls in patients with TBI. This one-arm intervention study aims to evaluate the feasibility of «StepIt» during acute hospitalization in TBI patients.

Methods

Participants were admitted patients with a mild to severe TBI. Participants received at least 3 to max. 10 individual and supervised training sessions of approximately 15 minutes per session during their stay at the hospital according to the «StepIt» training concept. The main outcome was feasibility as measured by rates of recruitment, inclusion, adherence, compliance, attrition, and safety. Secondary outcomes were training performance and user evaluation.

Results

Between November 2023 and March 2024 one hundred and twenty-nine patients with TBI have undergone eligibility screening. Seven out of ninety-four who fulfilled inclusion criteria gave written informed consent. Acceptable rates for recruitment (72.9 %), adherence (87.5 %) and compliance (93.8 %) were found. Over the study period no intervention-related (serious) adverse event occurred. The rate for inclusion (7.4 %) was low and the rate for attrition (42.9 %) was high.

Conclusion

The motor-cognitive balance training «StepIt» was deemed «feasible with modifications» in an acute hospitalization setting in people with TBI. Future studies should examine the feasibility of this intervention in different settings, such as inpatient or outpatient rehabilitation.

Video analysis as a tool to uncover the content of EMI-Heart, a family-tailored motor intervention in infants with congenital heart disease: An exploratory qualitative study

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Background

Congenital heart disease (CHD) is a common malformation in newborns, with a high incidence rate. Infants with CHD often experience delayed motor development, which can persist into childhood and adulthood. Despite the recognized need for early motor intervention in this population, there is a lack of specific interventions tailored for infants with CHD and their families in their first year of life. A qualitative study highlighted the burdens and needs of parents of infants with CHD, emphasizing the importance of communication, partnership, and support for their infants` motor development. In response to these findings, a family-tailored early motor intervention, EMI-Heart, was developed. EMI-Heart focuses on promoting infants' postural control, empowering parents as equal partners, and ultimately enhancing parental confidence in themselves and their infants' development with congenital heart disease after open-heart surgery. The aim of this study was to uncover the content of EMI-Heart.

Methods

A content-structured content analysis was conducted using MAXQDA Software 2020. In order to uncover the content of EMI-Heart, a descriptive, explorative, qualitative approach was chosen for this study. Forty-five video recordings of all EMI-Heart intervention infants were included.

Results

The transactions of the EMI-Heart intervention were identified. A Video Observational Tool was developed using these transactions. This includes the transactions identified between the infant, the parents and the physiotherapist. The presentation of the these shows the following main categories. A) Parents' presence during the intervention sessions at the University Children's Hospital, at home and online; B) Parents' active participation during the intervention session; C) Promotion of postural activities in prone and supported sitting.

Conclusion

The Video Observational Tool offers valuable insights into the specific transactions between the infant, parents and physiotherapist in EMI-Heart. The results of the study provide a foundation for future research and implementation of family-centered interventions in infants with CHD to improve motor developmental outcomes and overall family well-being. Continued efforts in this area are necessary to support this vulnerable population effectively.

The spiroergometric assessment of aerobic capacity in severely affected neurological patients in a chronic stage during a robotic-assisted gait training programme – A feasibility study

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Purpose

People with neurological diagnosis in a chronic stage have a reduced life expectancy due to physical inactivity. One method to promote physical activity in neurological patients is robotic-assisted gait training (RAGT). Effects of RAGT on peak aerobic capacity (VO_2peak) are mostly unknown in the targeted population. The aim of the present work is to evaluate the feasibility of the experimental setup of a future study on this topic regarding its acceptance and safety.

Method

Mono-centred feasibility study with two measuring points. Neurological patients in a chronic stage who were non-functional ambulators underwent a six-week RAGT programme and VO_2peak was assessed by spiroergometry. Feasibility criteria were safety, patient satisfaction, therapists' opinions, recruitment, inclusion, adherence, compliance and drop-out-rate. Secondary outcomes were VO_2peak and neurogenic bowel dysfunction.

Results

During eight months, four participants were included. Rates for recruitment (71 %), inclusion (80 %), adherence (92 %) and compliance (87 %) were high and seem promising. There were no dropouts and patient satisfaction was good. No safety concerns were detected. Methodological issues were identified which require modification for a future study.

Conclusion

Recommendation of a multi-centre pilot study to further clarify feasibility, with modification of the assessment of VO_2peak and better evaluation of training intensity.

Evaluation of the implementation of a mobility plan in the geriatric clinic at the University Hospital Zurich – A quality improvement study

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Introduction

Older inpatients exhibit reduced physical activity, leading to functional decline and prolonged hospital stays. A mobility plan was developed to counteract reduced mobility.

Objective

The scope of this study was to evaluate the implementation of a mobility plan in a geriatric clinic in Switzerland. The primary goal of this study was to evaluate the success of this implementation. The secondary objective was to assess the influence of the mobility plan on the physical activity of inpatients.

Methods

In this quality improvement study, a within-site design was employed to assess the acceptability, appropriateness and feasibility of the mobility plan among healthcare professionals. Furthermore, the documentation and objectives of the intervention were evaluated. The daily steps of inpatients were quantified using accelerometers. In addition, changes in the De Morton Mobility Index from admission to discharge were calculated. A descriptive analysis was applied to all datasets.

Results

Between 54.5 % and 90.7 % of the therapists accepted the mobility plan. In addition, the agreement rate was over 70 % for all items of the intervention appropriateness measure and minimum 80 % of the feasibility measure. Whereas nurses did not reach the predefined 50 % agreement rate for all items to assess the acceptability and neither on specific items of appropriateness nor feasibility measures. Mobility plans were documented for 88 % of all hospitalisation days and on 75 % a daily objective was established. Through the implementation of the mobility plan the daily steps of inpatients increased. Whereas no relevant difference was observed in the De Morton Mobility Index scores.

Conclusion

The implementation of the mobility plan was only partially successful because most nurses did not agree to the intervention. However, the agreement rate of therapists was satisfying as well as the documentation and the establishment of daily objectives in the mobility plan.

Reliabilität und Known-Group-Validität einer neuentwickelten kognitiv-motorischen Assessmentbatterie bei einer geriatrischen Patientenpopulation

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Hintergrund

Mit dem Verlust der kognitiv-motorischen Leistungsfähigkeit und dem Auftreten von pathologischen Gesundheitszuständen im Alter steigt auch das Sturzrisiko.
Eine Möglichkeit zur Behandlung von sturzgefährdeten älteren Erwachsenen stellen Exergames dar. Vergangene Untersuchungen haben gezeigt, dass Exergames einen positiven Einfluss auf das Gleichgewicht und die kognitiven Funktionen haben können. Obwohl die Vorteile solcher Systeme nachgewiesen sind, fehlen zuverlässige und valide Messinstrumente, um die trainierten Fähigkeiten zu erfassen. Informations- und Kommunikationssysteme könnten eine Lösung sein, da sie es ermöglichen, aufgaben- und leistungsorientierte Parameter in Echtzeit zu erfassen. Das Ziel dieser Studie ist es, die Test-Retest-Reliabilität und die Known-Group-Validität einer neuentwickelten kognitiv-motorischen Assessmentbatterie bei einer stationär-geriatrischen Patientenpopulation zu beurteilen.

Methode

Für die Beurteilung der Reliabilität und Validität wurde die Assessmentbatterie mithilfe des Dividat Sensos durchgeführt. Die Testbatterie besteht aus fünf kognitiv-motorischen und zwei physischen Tests. Diese wurde an zwei Messzeitpunkten mit 50 stationär-geriatrischen Patient:innen durchgeführt. Für die Beurteilung der Known-Group-Validität wurde der Gebrechlichkeitsstatus der Teilnehmenden beurteilt.

Resultate

Das durchschnittliche Alter der Teilnehmenden lag bei 77.70 ± 6.35 Jahren. Von 50 Teilnehmer:innen waren 25 (vor-)gebrechlich. Es konnten moderate bis gute Werte des Intraklassen-Korrelationskoeffizienten erreicht werden (ICC: 0.668-0.891). Zum zweiten Messzeitpunkt konnte die Testbatterie die robusten von den (vor-)gebrechlichen Teilnehmer:innen anhand der Reaktionszeit unterscheiden.

Schlussfolgerung

Die Assessmentbatterie ist in der Lage, die kognitiv-motorische Leistungsfähigkeit von geriatrischen Patient:innen in einem stationären Setting zuverlässig zu erfassen. Bezüglich der Known-Group-Validität sind weitere Untersuchungen mit grösseren Stichproben und spezifischeren Messinstrumenten zur Beurteilung der Gebrechlichkeit notwendig, um die Validität der Testbatterie zu beurteilen.

German Translation and Transcultural Adaptation of the Headache Screening Questionnaire followed by a Test-Retest Reliability Study

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Introduction

Tension-type headache (TTH) and migraines are the most frequent headache types. For appropriate headache treatment, physiotherapists need to be able to recognize these two headache types. The Dutch Headache Screening Questionnaire (HSQ-DV) is the only screening questionnaire that has moderate evidence as a screening tool for migraine and TTH. The goal is to translate the HSQ-DV into German and observe the test-retest reliability.

Methods

A cross-sectional study design was conducted to answer the research question. The HSQDV was translated according to the COMSIN Study Design checklist for Patient-reported outcome measurement instruments of Mokkink et al. (2019). The test-retest reliability was observed with a retest after two weeks. In the retest the subjects were asked if their headache had changed. For the test-retest reliability kappa values, positive percentage agreement and confidence intervals were calculated.

Results

The HSQ-DV was successfully translated into German. After the cognitive interviews, an introduction was written to better clarify which headache the questionnaire applies to when several types of headaches are present. the 47 subjects who were included in the data analysis, 33 subjects had no change of headache between test and retest. For migraine a kappa value of 0.80 with a 95 % confidence interval of [0.58, 1] was calculated. TTH achieved a kappa value of 0.67 and a 95 % confidence interval of [0.40, 0.94].

Conclusion

The HSQ-GV is a reliable screening questionnaire for migraines and TTH with substantial kappa values.

Maintaining Regular Physical Activity: What Works? The «Maintainer's» Perspective – A Constructivist Grounded Theory Study

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Background

The factors leading to physical activity maintenance are not well-understood. This study investigates such factors among individuals that have adhered to the WHO physical activity guidelines exceeding five years, explores new perspectives and proposes new conceptualizations in physical activity maintenance.

Methods

A constructivist grounded theory study was conducted to explore the phenomenon through the maintainers themselves (n = 10). Data was collected through in-depth interviews.

Results

In total 33 focused codes were formed into six broad categories in total: three main categories: 1) enjoyment; 2) adaptability; 3) well-being, the fundamental factor of 4) priority, as well as two supporting categories: 5) organization, and 6) community. The model presents the interconnectedness of these factors.

Conclusion

This study aligns and expands the existing literature on physical activity maintenance, emphasizing the importance of prioritization as foundational for adaptability, enjoyment, and well-being. The findings suggest that a dynamic approach is crucial for physical activity maintenance.

Discriminative ability of instrumented cognitive-motor assessments to distinguish fallers from non-fallers

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Background

In older populations, sensitive fall risk assessment tools are important to timely intervene and prevent falls. Instrumented assessments have shown to be superior to standard fall risk assessments and should capture both motor and cognitive functions. Therefore, the aim was to evaluate the ability of novel instrumented assessments with and without cognitive components, in distinguishing fallers from non-fallers in comparison to two standard fall risk assessments.

Methods

138 older adults (38 faller, 100 non-faller) aged 73 ± 7.3 years conducted five instrumented assessments on the Dividat Senso, a pressure-sensitive platform, and two standardized geriatric assessments (TUG, TUG-Dual Task). Fall status was assessed retrospectively. Statistical analyses involved logistic regression and Area Under the Curve (AUC) analyses. Cut-off values were calculated to identify sensitivity and specificity.

Results:

Univariate logistic regression indicated that the Go/No-Go test, a cognitive-motor assessment measuring response inhibition ($p < 0.001$), TUG ($p = 0.018$), and TUG-Dual Task ($p = 0.048$) were significant predictors of falls status with the Go/No-Go test, explaining the highest proportion of variance ($R^2 = 0.124$). The multivariate model achieved an AUC of 0.74. Among individual assessments, the Go/No-Go test had the highest AUC of 0.68, followed by the TUG and the TUG-DT (AUC = 0.64; 0.59).

Conclusion

While individual assessments like the Go/No-Go test and the TUG can offer some indication of fall status, a combined approach provides a more sensitive measure. The Go/No-Go test showed the best discriminant ability suggesting that sensitive fall risk assessments in relatively healthy older adults should include specific variables of cognitive sub-performances.

Effectiveness of an Exergame and Moderate Endurance Training on Jumping Ability and Endurance Performance in Adults: A Randomised Controlled Pilot Study

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Background

Exergames appear to be a promising tool in maintaining physical health due to their playful and engaging nature. This randomised controlled pilot study assessed the efficacy of ExerCube training (ECT) compared to moderate endurance training (ET) on jumping ability and endurance performance.

Methods

Forty-seven adults were recruited and randomly allocated to the intervention group (IG) or the control group (CG). The IG completed three weekly ECTs over eight weeks, while the CG performed moderate ET with the same frequency and duration. Both training programs progressively increased in duration and intensity throughout the intervention. In addition to anthropometric data, jump height and maximal oxygen uptake (VO_2max) was measured before and after the intervention.

Results

Forty-three subjects (aged 29.88 ± 10.87 years), of which 67.44 % were female, were included in the analysis with an average training adherence of 91.28 %. Apart from body weight, no significant differences ($p = 0.015$) were detected between the two groups at baseline. No significant time, group or time x group interactions were detected for the jump height. For the VO_2max, a significant time x group interaction of –2.91 ml/kg/min (95 % CI [–4.26, –1.55], $p < 0.001$) was determined. Furthermore, the IG showed a significant time interaction by 3.75 ml/kg/min (95 % CI [2.80, 4.70], $p < 0.001$).

Conclusion

Regular ECT has a superior effect on VO_2max than moderate ET and could positively influence cardiorespiratory fitness and overall health.

Cross-cultural adaptation and validity of the German version of the Back Pain Attitudes Questionnaire (Back-PAQ-G)

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Background

Low back pain (LBP) is a predominant musculoskeletal disorder and a leading cause of disability worldwide. In Switzerland, a substantial portion of the population experiences LBP at some point in their lives. Psychological factors such as distress and unhelpful attitudes towards LBP can influence the condition. The Back Pain Attitudes Questionnaire (Back-PAQ) specifically assesses attitudes regarding the lower back and LBP, but lacked a German version. This study aimed to translate and adapt the Back-PAQ into German and validate it in a German-speaking population.

Methods

The translation, cross-cultural adaptation and testing of face validity followed the COSMIN guidelines and included forward translation, synthesis, back translation, expert committee review and pre-testing. Construct validity was evaluated by comparing the Back-PAQ-G scores with those of the German version of the Tampa Scale of Kinesiophobia (TSK-GV) and the Fear Avoidance Belief Questionnaire (FABQ), using Spearman correlation rS and 95 % confidence intervals (CI). A priori hypotheses were established to examine agreement.

Results

The translated questionnaire was tested among participants with and without LBP, as well as healthcare professionals, in German-speaking Switzerland. The Back-PAQ-G showed moderate to strong correlation with the TSK-GV (rS = 0.63, 95 % CI 0.50 to 0.73). Correlation between the Back-PAQ-G and FABQ was weak to moderate (rS = 0.50, 95 % CI 0.34 to 0.64) in participants with LBP, showing varying correlations with the FABQ physical activity subdimension (rS = 0.60, 95 % CI 0.45 to 0.72) and the work subdimension (rS = 0.17, 95 % CI −0.02 to 0.37).

Conclusions

This study successfully translated and cross-culturally adapted the Back-PAQ into German. The Back-PAQ-G showed moderate construct validity. The correlation point estimates with TSK-GV and FABQ fall within the hypothesized range, while the lower (TSK-GV) or upper (FABQ) bound of the 95 % CI are outside of the a priori defined hypothesis. Variations in results may stem from the unique sociodemographic profiles of participants, who had notably lower overall mean total scores than those in previous translations. Nonetheless, the Back-PAQ-G is a promising tool, to aid in better understanding and managing LBP in clinical, educational and research settings in German-speaking areas.

ExerG – an exergame-based training device for the rehabilitation of the elderly: A functional model usability study

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Background

Exergames are interactive technology-based exercise programs. By combining physical and cognitive training components, they aim to preserve independence in older adults and reduce their risk of falling. This study evaluated whether primary end users (PEU – healthy older adults and patients with neurological and geriatric diagnoses) and secondary end users (SEU – health professionals) evaluated the ExerG functional model to be usable, providing a positive experience and therefore acceptable.

Methods

We conducted a mixed-methods study using several assessments to quantify the usability and enjoyment outcomes, along with semi-structured interviews to gain an in-depth understanding of the users' experiences. Descriptive statistics were used for quantitative outcome measures. For the qualitative data, thematic analysis (TA) using an inductive, data-driven approach was carried out to develop themes for each user group.

Results

We interviewed 20 PEUs (13 healthy older adults, 7 patients) and 22 SEUs at two rehabilitation centers in Austria and Switzerland. Scores of over 70 on the System Usability Scale denoted good usability. On the Physical Activity Enjoyment Scale-16 both PEU groups rated the ExerG highly. Our TA approach identified four themes per user group. Themes from both PEU groups confirmed their enjoyment of training with the ExerG, however more variety and greater challenges were requested. Whilst the patient group appreciated the security given by the harness system, the healthy older adults reported feeling restricted. SEU themes reflected their approval of this novel training device, although a desire for increased difficulty and more individualisation was expressed. Clear instructions and an easy-to-use harness system were acknowledged and useful feedback for the developers emerged.

Conclusions

In conclusion, the ExerG is usable, provides a positive experience and is thus considered an acceptable solution for the combined physical and cognitive training of the elderly. Our findings contribute to the ongoing development of the ExerG, which will be a welcome addition to current training options for the elderly. Further research is needed to confirm its effectivity in preserving functional independence in daily life and reducing the risk of falling.

Cross-cultural adaptation and reliability investigation of the German version of the Back Pain Attitudes Questionnaire

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Background

Low back pain (LBP) is a prevalent condition with significant personal, social, and economic implications. Psychosocial factors like kinesiophobia and pain catastrophizing influence its risk for chronicity. Questionnaires such as Fear Avoidance Belief Questionnaire (FABQ), Tampa Scale of Kniesiophobia (TSK), and STarT Back Tool address these factors, but no valid German version of Back Pain Attitudes Questionnaire (Back-PAQ) was available. This study aimed to translate and adapt Back-PAQ into German and evaluated its reliability properties for use among individuals with and without LBP and Healthcare professionals (HCP).

Study Design

Cross-sectional study in a test-retest design.

Methods

The translation and cross-culturally adaptation process followed international best-practice guidelines, involving several steps. 112 participants including individuals with and without LBP and HCP were recruited. Baseline and follow-up assessments were conducted online with a 7–14-day interval. Statistical analysis involved Cronbach's alpha, Interclass Coefficient, and Limit of Agreement for the Back-PAQ-G and the Back-PAQ-G-10.

Results

The pre-final German translation of the Back-PAQ underwent thorough comparison with the original questionnaire, resolving discrepancies through discussions with the original author and an expert committee. Specific German terms were adapted for broader suitability in the DACH region. Face validity testing indicated high participant satisfaction with the questionnaire's clarity and relevance. Internal consistency analysis revealed excellent Cronbach's alpha values for both the Back-PAQ-G ($\alpha = 0.94$) and the Back-PAQ-10 ($\alpha = 0.83$). Test-retest reliability was good for both versions, with ICC values of 0.803 for Back-PAQ-G and 0.814 for Back-PAQ-G-10. SEM and SDC values suggested minimal measurement error. No floor or ceiling effects were observed. Differences between baseline and retest assessments fell within the limits of agreement for both versions.

Conclusion

The versions of 34-items and 10-items of the Back-PAQ-G both show an excellent internal consistency and good reproducibility, suitable for use in clinical or research settings in German-speaking countries, especially in the DACH region.

Effect of cryotherapy and intermittent compression on the physical function after total knee arthroplasty: A randomised controlled study

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Background/Objective

Total knee arthroplasty (TKA) is a recognized and effective treatment for end-stage knee osteoarthritis (OA). Rehabilitation after TKA aims to improve patients› physical function, but it poses challenges. This study aimed to evaluate the effect of short-term cryotherapy and intermittent compression (CIC) on early rehabilitation and physical function following TKA surgery.

Methods

This single centre, unblinded, randomised controlled trial included 35 participants scheduled for primary TKA. The intervention and control group followed the same standard care protocol. The intervention group received CIC, the control group received no cooling intervention. Physical function was assessed using the Timed Up and Go test (TUG), 10-Meter Walk Test 10 MWT, and Knee injury and Osteoarthritis Outcome Score (KOOS).

Results

Four days after surgery, both groups showed a decrease in TUG (IG: +16.40 sec, KG: +17.20 sec) and 10 MWT (IG: +12.1 sec, KG: +15.21 sec), but the IG group showed a smaller decrease than the KG group. The IG group had higher scores than the KG group in all subcategories of the KOOS questionnaire (Pain IG: 48.30 %, KG: 45.00 %, Symptoms IG: 51.60 %, KG: 51.6 %, ADL IG: 42.50 %, KG: 41.40 %, QOL IG: 35.80 %, KG: 31.10 %).

Discussion/Conclusion

The results suggest that short-term CIC has a beneficial effect on physical function following TKA surgery. Participants in the intervention group showed a trend toward faster speed on the TUG and 10 MWT and higher scores on the KOOS questionnaire. The duration of CIC plays a crucial role in achieving optimal outcomes.

Oxygen uptake efficiency in healthy adults in eccentric versus concentric bicycle ergometer exercise

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Background

Eccentric training has generated increasing interest in cardiorespiratory rehabilitation over the past decade. Because of its low demands on the cardiac and respiratory systems, it could represent a more economical type of training for exercise-limited subjects. The aim of this study was to investigate the acute respond of the oxygen uptake efficacy slope (OUES) and other cardiorespiratory parameters in healthy adults between concentric and eccentric ergometer exercises according to a submaximal incremental step protocol. The oxygen uptake efficacy slope was developed for submaximal cardiorespiratory exercise testing and shows how effectively oxygen is transferred by the lungs and used in the periphery.

Methods

23 participants took part in this crossover study at the clinic for pneumology at the university hospital in Zurich. Each subject performed the same submaximal incremental protocol on both concentric and eccentric bikes. The outcomes were collected during the end of exercises. A linear mixed models was used for the statical analysis.

Results

After the static analysis, there were no significant differences in OUES, heart rate, SpO_2, dyspnoea and leg fatigue at the end of exercise between concentric and eccentric ergometry according to the incremental step protocol.

Discussion

Although there was no significant difference in OUES and other parameters, the slightly reduced values and the available literature indicate that eccentric training may have valid success in severely cardiorespiratory compromised subjects. In conclusion the acute respond of OUES in a submaximal short eccentric exercise setting in healthy adults is nearly the same as in concentric exercise setting.

Bewertung der Gütekriterien von leistungsbasierten Testverfahren zur Messung der maximalen isometrischen Kraft bei Myositis-Patienten:innen. Eine systematische Literaturübersicht

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Hintergrund

Myositis ist eine seltene und entzündliche Autoimmunerkrankung, die zu Muskelschwäche führt. Die Behandlung umfasst Medikamente, Kraft- und Ausdauertraining. Das Hauptziel des Trainings ist die Verbesserung der eingeschränkten körperlichen Leistungsfähigkeit, insbesondere in Bezug auf die motorischen Fähigkeiten Kraft und Ausdauer. Um die Wirkung eines Trainings messen zu können, sind Testverfahren mit guten Messeigenschaften nötig, daher ist das Ziel dieser Studie die Messeigenschaften zu untersuchen. Da bei Myositis-Patienten:innen die Muskelschwäche im Vordergrund steht, wird in dieser systematische Literaturübersicht lediglich auf die Kraft eingegangen.

Methode

Anhand der COnsensus-based Standards for the selection of health Measurement INstruments (COSMIN) wurden nach dem Screening der Titel und Abstracts, die Risk of Bias (ROB), Messeigenschaften und die Qualität der Evidenz von unabhängigen Forscher:innen beurteilt.

Ergebnisse

Sieben von 5839 Veröffentlichungen wurden in diese systematische Literaturübersicht eingeschlossen. Zur Bestimmung der maximalen isometrischen Kraft wurden der Manuelle Muskeltests (MMT) und das Handheld Dynamometer (HHD) genutzt. Die Messeigenschaften der Reliabilität beim MMT der einzelnen Muskelgruppen ist «unzureichend», vom Total Score «ausreichend» und die Qualität der Evidenz «sehr niedrig». Die Messeigenschaften der einzelnen Muskelgruppen der Reliabilität beim HHD liegt bei «unzureichend» und «ausreichend». Die Qualität der Evidenz liegt zwischen «mässig» und «sehr niedrig».

Schlussfolgerung

Es besteht Bedarf an einer Standardisierung der vorhandenen Testverfahren, um ihre Aussagekraft und Vergleichbarkeit zu verbessern. Für die Messung der maximalen isometrischen Kraft ist das HHD das vielversprechendere Testverfahren als das MMT, da die Ergebnisse positiver sind und allgemein der HHD besser untersucht ist. Um weiter Daten zu erhalten, sollten beide Testverfahren weiter untersucht werden.

Relationships between Movement accuracy and Movement control in Patients with Neck Pain

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Background

Neck pain is a common condition with a significant impact on daily functioning and quality of life. Sensorimotor control in the cervical spine is considered an important factor in the development and persistence of neck pain. Tests such as the Movement Accuracy Test (MAT) and the Movement Control Test (MCT) are often used to assess sensorimotor control in patients with neck pain. Despite studies investigating these tests, their relationship remains unclear.

Objectives

This study aimed to investigate the relationship between MAT and MCT scores in patients with neck pain. Design: Cross-sectional study

Methods

Adult participants were assessed using Figure-8 (F8) inner and outer zone and Zigzag (ZZ) MAT, which involves tracing and tracking of patterns, and seven MCTs testing the upper and lower cervical spine. The order of assessment was randomised for each participant and the results were assessed by independent experts. Data was analysed using Spearman rank to determine correlations between MAT and MCT scores.

Results

A total of nineteen participants took part in this study. Spearman rank showed no correlation between F8 (inner zone: $r = -0.12$, 95 % CI = −0.54 to 0.36; F8 outer zone: $r = -0.08$, 95 % CI = −0.52 to 0.39) or ZZ ($r = -0.13$, 95 % CI = −0.55 to 0.35) and MCT.

Conclusion

This study showed no correlation between MAT and MCT in patients with neck pain. Differences in task difficulty and the multifactorial nature of neck pain may have contributed to the observed discrepancy.

Muscle stiffness among upper string players with and without playing-related musculoskeletal disorder: A cross-sectional study

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Background

Musicians are at high risk to develop playing-related musculoskeletal disorders (PRMDs), which can adversely affect their health, life and performance. Upper string players frequently experience symptoms in the neck and shoulder regions, indicating high demand on their upper extremities during performance. Concurrently, recent research has linked muscle stiffness (MS) to musculoskeletal issues like neck pain and dysfunction among other populations.

Objective

This study aimed to compare MS in the upper trapezius muscle (UTM) between upper string players with and without PRMDs. Additionally, it explored potential associations between MS and musicians' demographic, health-related, and playing-related features.

Methods

In total, 23 upper sting players from the Conservatorio della Svizzera italiana and the Orchestra della Svizzera italiana completed a self-reported questionnaire on background, practice habits, PRMD, physical activity (IPAQ-SF), quality of life (SF12), and digital pain drawings, as well as PRMD intensity via Numeric Rating Scale. Moreover, MS in UTM was evaluated using MyotonPRO®.

Results

A total of 12 upper string players self-reported current PRMDs and 11 did not show any PRMDs. Statistical analysis showed no significant difference in MS between these groups. However, the non-PRMD group demonstrated a tendency toward lower MS values. Moderate correlations, although not statistically significant, were found between MS and gender, smoking, the instrument and PRMDs reported in the right neck-shoulder region.

Conclusion

No significant difference was found between PRMD and non-PRMD groups, although those without PRMDs showed slightly lower MS. Additionally, there was no statistically significant correlation observed between MS and musicians' features. Being the first study that explored MS among musicians, further research is essential to deepen the understanding of the relationship between MS and PRMDs. Future studies should focus on conducting longitudinal assessments monitoring changes in MS among homogeneous instrumental groups.

Does sensor-based gait assessment reflect self-perception of gait impairment in people with multiple sclerosis? A cross-sectional study

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Background

Mobility limitations are common among people with MS (pwMS), with gait impairments significantly impacting daily life. Gait assessments and patient-reported outcome measures (PROMs) are essential for assessing these gait impairments. However, it remains unclear which specific gait metrics best reflect the perceived walking impairments of pwMS. This study aimed to investigate the association between spatiotemporal and gait quality metrics and the perceived walking impairments of pwMS.

Methods

A cross-sectional study with 23 pwMS was conducted. The patients' perceived walking impairments (PPWI) were assessed by the 12- items MS walking scale (MSWS-12) and the gait metrics were measured by the sensor-based movement analysis systems (SBMAS) NUSHU and GAITrite® during the timed 25-foot walking test. To calculate the strength of the association between the gait metrics and the MSWS-12 the Spearman's rank correlation coefficient was applied.

Results

Regardless of the SBMAS used, gait velocity, cadence and mean double support time showed the highest correlation with the MSWS-12 score ($0.4 < rS < 0.75$). The correlation values between the MSWS-12 score and the gait quality metrics swing time symmetry and swing time variability demonstrated divergent results, depending on which SBMAS' metrics were included in the analysis.

Conclusion

Velocity remains a valuable metric, reflecting PPWI of pwMS. The findings to the association between the PPWI and double support time may highlight the relevance of balance-related metrics in assessing self-perceived walking impairments. Further studies with larger sample sizes are required to confirm these findings.

Investigating the association between fear of movement and proprioceptive weighting in chronic low back pain patients and healthy controls

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Background

Altered motor control is viewed as important in low back pain (LBP) chronification. Besides reduced range of motion and slower movements, LBP is associated with impaired postural control, particularly under challenging conditions. Studies analysing proprioceptive weighting in individuals with and without LBP suggest that a reduced reliance on paraspinal proprioception might contribute to the observed differences in postural control. Additionally, psychological factors such as fear of movement (FOM) are thought to influence motor control. Yet, it is unknown if proprioceptive weighting is associated with FOM.

Methods

Proprioceptive weighting was assessed in chronic, unspecific LBP ($n = 45$) and healthy controls ($n = 45$) standing on stable and unstable underground, using vibrotactile stimulation on triceps surae and erector spinae. General FOM was evaluated by completing the Tampa Scale of Kinesiophobia (TSK) and customized items of a previous study to determine direction-specific fear of movement (dFOM) for lumbar flexion, extension, and rotation.

Results

Participants with and without LBP did not differ regarding proprioceptive weighting, independent of the underground. Except for dFOM extension, the relationship between proprioceptive weighting and FOM seems to be inconsistent between individuals with and without LBP. Although only the interaction of dFOM flexion and group reached statistical significance, indicating a negatively correlated trend for healthy participants (Rho -0.224, $p = 0.068$).

Conclusion

Results suggest that distinguishing between general and direction-specific FOM when examining the association with proprioceptive weighting is important. Further research is needed to deepen our understanding of how FOM affects proprioception and subsequently influences motor control.

Mobilization and manipulation of the thoracic spine: Quantifying the variability of forces delivered by experienced OMT physiotherapists to healthy human volunteers and a manikin

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Background

Physiotherapists use spinal mobilization and manipulation to treat musculoskeletal disorders. Research shows advantages of learning these techniques using a manikin. However, the force-time characteristics of mobilization and manipulation applied to manikins in classrooms may differ from those delivered clinically to humans. This study provides first-ever results investigating whether the force profiles of mobilization and manipulation performed by experienced physiotherapists on the thoracic spine of humans are different from those delivered to a manikin.

Methods

Fourteen experienced physiotherapists applied prone mobilization (Grade III central posterior-to-anterior, 30 seconds) and a single prone manipulation to the T6 vertebra of three healthy human volunteers and a manikin (HAM™, CMCC) according to three different patient scenarios (vignettes (v)), matched to the volunteers: v1: 30-year-old male, 185 cm; v2: 50-year-old male, 175 cm; and v3: 65-year-old female, 165 cm. The applied forces were measured using a flexible pressure pad (Pliance®, Novel, 100 Hz). Force-time characteristics of mobilization and manipulation on the humans were compared to the ones on the manikin using two-sided Wilcoxon rank-sum tests and a linear mixed effects model.

Results

Data were analyzed from 13 physiotherapists (seven females, age (median, IQR): 40 (36–45) years, experience as physiotherapist: 14 (12–21) years). Peak forces were higher when delivered to the manikin versus the human. Specifically, for mobilization, mean difference of average peak forces on v1 was 58.3 N ($p < 0.001$); on v2: 98.9N ($p < 0.001$); on v3: 49.8 ($p < 0.001$). Similarly, for manipulation, on v1 mean difference was 128.1N ($p < 0.001$); on v2: 146.5 N ($p < 0.001$); on v3: 136.5 N ($p < 0.001$).

Conclusion

The force profiles of mobilization and manipulation delivered to humans were different from those delivered to a manikin. Still, the experienced physiotherapists adapted their manipulation to the vignette, applying more forces to the young man than to the elderly woman, regardless of whether their delivery was to a human or a manikin.

Minimal intensity threshold for maximum metabolic cost reduction in healthy adults during eccentric cycling exercise until exhaustion: An interventional cross-over study

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Background

Eccentric cycling (ECC) has shown reduced cardiorespiratory demand compared to traditional concentric cycling (CON), with 60–80% lower oxygen consumption even at high intensities. Therefore, it represents a promising option for individuals with advanced pulmonary disease, addressing deconditioning and sustaining muscle mass. However, existing literature lacks information on oxygen uptake (VO_2) behaviour during ECC in healthy adults, the optimal training dosage, and the most efficient intensity for maximal VO_2 difference. The aim of the study was to investigate the VO_2 kinetics during CON and ECC, at what percentage of peak-exercise performance the difference in VO_2 between CON and ECC is greatest and at what percentage the minimal intensity threshold for maximal difference in VO_2 could be.

Methods

According to a single-arm, cross-over study, each participant underwent ergospirometry on both the concentric and eccentric ergometers until exhaustion. The primary outcome VO_2, and additional outcomes were measured breath-by-breath. At peak-exercise dyspnoea and leg fatigue were assessed. Differences in means between CON and ECC were calculated for rest, for every 10th percentile until peak-exercise and recovery.

Results

Twelve healthy participants (age 29.9 ± 11.4, 6 female) were included into the study. The mean differences in VO_2 increased with higher load, highest difference in VO_2 was observed at peak-exercise with a difference of 1.55 ± 0.46 l/min (95 % CI [1.30, 1.60], $p < 0.001$). Apart from the increase in VO_2 difference between 70 % and peak-exercise, the greatest rise was observed from 30 % to 40 % of individual maximal peak performance, with a mean increase in difference of 0.23 l/min.

Conclusion

The minimal intensity threshold for maximal difference in VO_2 seems to be at 40 % of individual peak-exercise. Additional research is required to determine the optimal training dosage, particularly in healthy individuals and later in patients.

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Projekte aus Fachentwicklung und Forschung Abstracts 2024

Master of Science in Physiotherapie

Economic evaluation of the advanced physiotherapy practitioner role at the cantonal hospital Winterthur: A cost-benefit analysis

Julia Brechbühl

Betreuungsperson:
Peter Brem, PT, MSc

Background

Consultations done by advanced physiotherapy practitioners (APP) were implemented at the cantonal hospital Winterthur (KSW) more than five years ago. The cost-effectiveness of these consultations has not yet been evaluated. Therefore, the aim of this study is to carry out a cost-benefit analysis to evaluate if the APP consultations hip, foot and anterior cruciate ligament (ACL) are cost-covering for the KSW and to compare its cost-effectiveness with the consultations done by the head physicians (HP).

Methods

A retrospective cost-benefit analysis was performed. Revenues and costs based on the figures from 2023 and 2024 of the KSW. The revenues and costs of the consultations done by the APP and the HP were compared and the contribution margins one and two and the cost-benefit ratios were calculated.

Results

The APP consultations for hip and foot showed positive contribution margins with cost-benefit ratios of 1.21 and 1.2 respectively. The consultation for the ACL did not cover the costs with a cost-benefit ratio of 0.57. The HP consultations showed positive contribution margins with cost-benefit ratios of 1.05 for hip and foot and 1.01 for ACL.

Discussion/Conclusion

The results of the study showed that the APP consultations for hip and foot are cost-covering while the ACL consultations are deficient. In comparison with the HP consultations the hip and foot consultations done by the APP are currently more cost-effective for the KSW. However, these results must be interpreted with caution as the duration of the consultations differ between the APPs and the HPs. Therefore, the APPs can help manage the patient volume cost-effectively but cannot substitute the HP consultations.

This study has shown that the introduction of different APP roles has no negative financial impact for KSW.

Statement des Praxispartners

Es war ein Privileg, Julia zu begleiten. Ihre Arbeit ist ein inspirierendes Beispiel dafür, was möglich ist, wenn tiefes Wissen und leidenschaftliches Engagement aufeinandertreffen. Sie hat sich durch den Zahlendschungel navigiert und dabei immer den Überblick behalten. Ihre Fähigkeit, komplexe Daten in wertvolle Erkenntnisse zu verwandeln, ist bewundernswert. Julias Arbeit hat nicht nur Erwartungen übertroffen, sondern setzt auch einen neuen Standard für zukünftige Studierende.

Besonders bemerkenswert ist die Bedeutung ihrer Arbeit für die Zukunft der Physiotherapie und ihre Rolle im Gesundheitswesen.

Julias Entwicklung zu begleiten, war eine Ehre, und ich freue mich auf ihre weiteren Erfolge. Julia zeigt uns, dass mit der richtigen Einstellung alles möglich ist.

Peter Brem, PT, MSc
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Incidence rate of graft failure or revision after primary anterior cruciate ligament reconstruction

Julia Brechbühl

Betreuungs-personen:
Marina Rubert, PhD
Jörg Mayer, PhD

Background

Graft failure after anterior cruciate ligament (ACL) reconstructions is a risk that often requires further surgery. Rapid ossification at the implant site is crucial to reduce tunnel widening, limit osteolysis, and avoid defect due to fixation material removal before revision surgery. Surgical Fusion Technologies (SFT) aims to develop a technology which would allow early revision. The goal is to determine when a revision surgery is necessary following reconstruction and whether early ossification consequently provides an advantage. Therefore, as a first step, this study aims to evaluate graft failure rates, with the highest occurrence expected within the first two years after primary ACL reconstruction.

Methods

A search of the PubMed database was conducted, and additional studies were identified by reviewing reference lists. Inclusion and exclusion criteria were defined, and the quality of the included studies were assessed and ranked.

Results

Four out of 129 studies were included. Over a total of 10 years, 192 cases of ACL graft rupture or revision were recorded. Of these, 128 cases (3.03 %) occurred within the first two years after primary surgery, while 64 cases (1.52 %) occurred in the following years.

Discussion/Conclusion

The findings indicate that the incidence rate of re-injury to the ipsilateral knee is twice as high within the first two years compared to the period between the second and the tenth year.

With a possible new technology SFT would fill a critical gap in the surgical treatment of ACL ruptures. The rapid ossification of the fixation material within one year would be a response to the challenges and allow for an early revision procedure. The clinical benefit for a surgical technology that allows this early revision would thus be given with the incidence rate almost doubled in the first two years.

Statement des Praxispartners

In der Surgical Fusion Technologies arbeiten wir an der nächsten Generation von Fixationssystemen für den Ersatz des vorderen Kreuzbandes und wollen hier grundsätzlich neue Wege gehen. Julias minutiöse und findige Aufarbeitung der klinisch, keineswegs trivialen, Datenlage stärkt unsere Überzeugung, dass wir hier auf einem spannenden Weg sind und die Chance haben, eines der klinischen Kernprobleme mit unserer Entwicklung anzugehen. Liebe Julia, deine Hartnäckigkeit und dein kritisches Hinterfragen von Zielsetzungen haben uns sehr geholfen, die richtigen Fragestellungen zu identifizieren und dadurch auch dann wirklich relevante Aussagen gewinnen zu können. Herzlichen Dank für Dein Interesse an unseren Fragestellungen und für die Bereitschaft, Dein Wissen mit uns zu teilen. Wir haben durch die Arbeit mit Dir eine neue, wertvolle Ressource entdeckt, die wir in Zukunft hoffentlich noch häufiger nutzen können.

Jörg Mayer, PhD
Surgical Fusion Technologies GmbH, Schlieren

Physiotherapeutische Unterstützung des Weaning- und Extubationsprozesses auf der Kinderintensivstation des Kinderspitals Zürich: Ein Teilprojekt im LIBERATION – Konzept

Lisa Brown

Betreuungsperson:
Jürg Burren, PhD

Ausgangslage

Invasive Beatmung ist eine der häufigsten Therapiemodalitäten, welche auf Kinderintensivstationen angewandt werden. Die Beatmungsdauer muss so kurz wie möglich gehalten werden, um iatrogenen Schaden und nosokomiale Infektionen zu verhindern. Trotz Mangel an Studien bei Kindern ist der physiotherapeutische Beitrag im Weaning – und Extubationsprozess bei erwachsenen Intensivpatient:innen etabliert. Das Kinderspital Zürich nutzt die Umsetzung des LIBERATION – Konzeptes, um die Fesseln der Intensivmedizin zu sprengen und die Nebenwirkungen der Intensivbehandlung zu mindern. Mit dieser Arbeit soll ein Leitfaden erstellt werden, welcher sich mit dem physiotherapeutischen Beitrag zu den Aspekten Weaning und Extubation als Teil des Befreiungsschlages von intensivmedizinischen Komplikationen durch Beatmung befasst.

Methode

Nebst einer Literatursuche wurden nationale und internationale Interviews mit Expert:innen aus den pädiatrischen Fachbereichen Physiotherapie, Intensivmedizin und Intensivpflege zum Thema Weaning und Extubation geführt.

Ergebnisse

Die Interviews haben den Bedarf an intensivierter Zusammenarbeit zwischen der Physiotherapie und der Intensivpflege – und Ärzteschaft aufgezeigt. Dabei sind insbesondere Schnittstellenpflege und Optimierung des Informationsaustausches von Bedeutung. Als Produkt unseres Projektes ist ein Leitfaden entstanden, welcher ins LIBERATION – Konzept einfliesst.

Diskussion/Schlussfolgerung

Der physiotherapeutische Beitrag im Weaning – und Extubationsprozess trägt zur Minimierung von Nebenwirkungen bei. Dabei fällt auf, dass national und international, weder Konsensus noch Guidelines bestehen. Auf der Metaebene zeigt sich, wie wichtig interprofessionelle Zusammenarbeit für kritisch kranke Kinder ist. Daher leistet der erarbeitete Leitfaden einen signifikanten Beitrag zur gesamtheitlichen Versorgung von kritisch kranken Kindern am Kinderspital Zürich. Schnittstellenpflege und Interprofessionalität sind dabei Schlüsselelemente. Zur Qualitätssicherung wird der Leitfaden kontinuierlicher Evaluation und Verbesserung unterliegen.

Statement des Praxispartners

Lisa hat mich von Anfang an mit ihrem Enthusiasmus und ihrer Strukturiertheit beeindruckt. Es ist schön zu sehen, wie die Interprofessionalität durch Arbeiten wie diese profitiert. Die Zusammenarbeit war äusserst bereichernd und hat für beide Seiten einen Gewinn hervorgebracht. Zur gelassenen, fundierten Präsentation der Arbeit möchte ich Lisa hiermit nochmals besonders gratulieren.

Jürg Burren, PhD
Universitäts-Kinderspital Zürich, Abteilung für Intensivmedizin & Neonatologie

Entwicklung eines Leitfadens zur adäquaten Überwachung der Eiweisszufuhr und der körperlichen Aktivität bei stationären Bewohner:innen des KZU

Florian Graf

Betreuungsperson:
Daniela Frehner, PT

Ausgangslage

Ein in der Physiotherapie unterschätzter Faktor, welcher den Gesundheitszustand von älteren Erwachsenen beeinflussen kann, ist der Ernährungszustand. So steigt mit dem Lebensalter auch die Gefahr an einer Mangelernährung zu leiden. Trotz der hohen Prävalenz an mangelernährten älteren Erwachsenen bleiben viele Fälle unentdeckt. Insbesondere in Pflegeeinrichtungen, wie dem KZU, ist es daher wichtig ein einheitliches Vorgehen im Hinblick auf mangelernährte Bewohner:innen zu haben. Aktuell gibt es kein systematisches Vorgehen bezüglich der Identifizierung und Behandlung mangelernährter Bewohner:innen. Das Ziel der vorliegenden Arbeit ist es daher, basierend auf den Erkenntnissen eines vorangegangenen Pilotprojektes und auf Basis einer Literaturrecherche, eine Leitlinie zur Identifizierung und Behandlung von mangelernährten Bewohner:innen zu entwickeln.

Methode

Innerhalb des Implementierungsprozesses wurde eine Stakeholder-Analyse zur Identifizierung der beteiligten Professionen durchgeführt. Im Anschluss wurde ein Fokusgruppeninterview durchgeführt, um drohende Barrieren und Förderfaktoren im Hinblick auf den neuentwickelten Leitfaden zur Behandlung von mangelernährten Bewohner:innen herauszuarbeiten. Auf Basis der Barrieren wurden Lösungsstrategien entwickelt. Die Auswahl der Assessments und der Trainingsempfehlung basiert auf einer Literaturrecherche sowie den Wünschen der Institution.

Ergebnisse

Das Ergebnis ist ein praxisorientierter und interdisziplinärer Leitfaden zur Identifizierung mangelernährter Bewohner:innen im KZU. Der Leitfaden besteht aus einem Assessmentteil, einem Behandlungsteil sowie einem Re-Evaluationsteil.

Diskussion/Schlussfolgerung

Der Leitfaden wurde unter Berücksichtigung der institutionsabhängigen Gegebenheiten entwickelt. Dieser ist zwar in der Lage mangelernährte Bewohner:innen zu identifizieren, jedoch ist er nicht in der Lage, die Ursachen zu bestimmen. Der Leitfaden bietet eine evidenzbasierte Grundlage für die Identifizierung und Behandlung potenziell gefährdeter Bewohner:innen und sorgt im Vergleich zu vorher für eine höhere Behandlungsqualität. Aussagen bezüglich der Praxistauglichkeit können erst nach der Implementierung getroffen werden.

Statement des Praxispartners

Um eine hochstehende interprofessionelle Behandlung unserer Bewohner:innen anbieten zu können, entwickelte Florian Graf einen interprofessionellen Leitfaden zur adäquaten Überwachung der Eiweisszufuhr und der körperlichen Aktivität bei stationären Bewohner:innen des KZU. Durch dessen Nutzung erreichten wir eine deutliche Verbesserung des Behandlungsstandards. Wir danken Florian Graf für seinen grossartigen und hoch motivierten Einsatz. Der Leitfaden, welcher zusätzlich äusserst übersichtlich mittels Poster in den verschiedenen Zentren hängt, wird regelmässig genutzt.

Daniela Frehner, PT
KZU, Kompetenzzentrum Pflege und Gesundheit, Bassersdorf

Development of a movement concept for Marienhaus residents to be supervised by auxiliary nursing staff

Jane Muheim

Betreuungsperson:
Lidija Radulovic

Background

Sedentary behaviour has been linked to an increased incidence of sarcopenia, frailty and non-communicable diseases. This results in reduced independence, often accompanied by a quicker rate of cognitive decline. For older adults in long-term care institutions, daily sitting time consistently exceeds ten hours. The aim of this project was to develop a movement concept that enables nursing staff to increase the physical activity of residents. Creating a culture of mobility should be beneficial for both residents and staff.

Methods

A review of the literature on PubMed was conducted concerning the negative effects of a sedentary lifestyle and the benefits of physical activity for older adults. Individual meetings were held with managers to determine the requirements of the movement concept. These were followed by a questionnaire for auxiliary nurses to gain quantitative and qualitative data regarding implementation. An inductive approach was used for coding the qualitative data. Before finalising the movement concept, a SWOT analysis was undertaken.

Results

A considerable amount of literature was found that confirmed the importance of increasing the physical activity of residents whilst reducing sitting time. Management perspectives provided fundamental information for developing the movement concept and one floor was designated for the pilot project. The questionnaire data yielded interesting details to be taken into consideration when planning implementation. Exercises from the OTAGO programme were selected for inclusion and an easy-to-use tool was developed for auxiliary nursing staff.

Discussion/Conclusion

This project should motivate staff and residents, however it is currently limited to pedestrians. If extended, anonymity should be considered for questionnaire respondents. The movement concept should improve the general well-being of residents by increasing their physical activity and encouraging social interaction. Further benefits expected for the nursing care home include higher levels of job satisfaction and an enhanced reputation in the local community.

Statement des Praxispartners

Jane Muheim hat sich während des Transfermoduls mit dem Thema «Bewegung» sehr intensiv befasst. Sie zeigte grosses Interesse und das Engagement für Implementierung und Umsetzung vom Bewegungskonzept. Interne Fachpersonen wurden von Frau Muheim in das Thema einbezogen und waren von dem Ergebnis begeistert. Das Bewegungskonzept wurde erfolgreich implementiert und die Umsetzung findet weiterhin täglich statt. Wir bedanken uns herzlich bei Frau Muheim für die Idee und ihren tollen Beitrag.

Lidija Radulovic
Alters- & Pflegeheim Marienhaus, Basel

Die Beachtung der Motive für den Tabakkonsum in den Rauchstopp-Kampagnen

Elke Pollock

Betreuungsperson:
Frank Wieber, PhD

Ausgangslage

Das Rauchen ist eine der Hauptursachen für einen vorzeitigen Tod weltweit. Mit fast zwei Millionen Raucher:innen gehört der Tabakkonsum zu den grössten Problemen der öffentlichen Gesundheit in der Schweiz. Während die Werbebotschaften der Tabakkonzerne bereits spezifisch auf ihre verschiedenen Zielgruppen eingeht, hat die Tabakprävention noch ein grosses Potential auf dem Gebiet der Marktsegmentierung. Ziel dieses Projekts ist es herauszufinden, welche Interventionen zu welchen Zielgruppen passen und inwiefern Motive für das Rauchen in den Rauchkampagnen berücksichtigt werden.

Methode

Eine Literaturrecherche wurde in PubMed, PsycINFO und Web of Science durchgeführt. Die Ergebnisse wurden von Expert:innen in «Jugendliche Rauchprävention» und «Erwachsen – Rauchstopp» aufgeteilt und die Botschaften mit den dazugehörigen Kanälen extrahiert und den Zielgruppenprofilen zugeordnet und analysiert.

Ergebnisse

Es wurden für alle Zielgruppenprofile passende Interventionen und Botschaften gefunden. Viele waren allgemeine Rauchkampagnen mit Fokus auf Gesundheit, Kosten, Hygiene und Fitness. Einige gingen auf das Passivrauchen, die Suchtfreiheit und die Vorbildfunktion ein.

Diskussion/Schlussfolgerung

Interventionen oder Botschaften spezifisch für die Rauchmotive gab es teilweise. Dies hat auch damit zu tun, dass die Details der Intervention oft nicht klar ersichtlich waren in der vorhandenen Literatur. Die Kampagnen sind sehr grossflächig und versuchen eine grosse Population anzusprechen. Es wird nicht auf die Neugierde der Jugendlichen eingegangen, obwohl dies ein wirksamer Aspekt sein kann. Ausserdem wird nicht auf den normativen Druck bei den Erwachsenen eingegangen, obgleich dies das Verhalten sehr beeinflusst.

Die Tabakpräventionskampagnen sollten auf die Gründe der Raucher:innen jedes Segments eingehen. Ausserdem reicht es nicht Rauchstoppkampagnen nur sporadisch durchzuführen, denn die Intensität, die Dauer, die Regelmässigkeit und die genutzten Medienkanäle spielen eine Rolle. Zudem haben wirtschaftliche und politische Aspekte einen grossen Einfluss auf die Tabakprävention und könnten den Erfolg und die Implementierung der Tabakpräventionskampagnen hindern.

Statement des Praxispartners

Elke Pollock hat in ihrem Praktikum im Projekt «Reach-Zielgruppenprofile in der Tabakprävention» mitgearbeitet. Nach der Orientierung in dem sehr umfangreichen multiprofessionellen Projekt hat sie mit grossem Engagement an der Frage gearbeitet, wie Präventionsbotschaften aussehen sollten, um die im Projekt erarbeiteten Rauch-Typen erfolgreich zu erreichen. Dabei hat sie methodisch systematische Literaturrecherchen mit anwendungsnahen Internet-Recherchen verbunden und die Ergebnisse in einer gezielten Zusammenschau aufbereitet. Diese Ergebnisse sind sehr wertvoll für das Projekt. Wir haben die Zusammenarbeit mit Elke sehr geschätzt und fanden insbesondere auch die Austausche zu den Gemeinsamkeiten und Unterschieden der Public Health und der Physiotherapie Forschung sehr inspirierend. Wir danken ihr ganz herzlich für die grosse Unterstützung und die angenehme Zusammenarbeit und wir freuen uns, wenn wir zu den Ergebnissen im Austausch bleiben.

Frank Wieber, PhD
ZHAW, Institut für Public Health, Winterthur

Physiotherapie in der akuten Phase des Guillain-Barré-Syndroms auf der Intensiv- und Bettenstation

Matin Qadire

Betreuungsperson:
Manuel Monteiro Alves, PT, MSc

Ausgangslage

Das Guillain-Barré-Syndrom (GBS) ist eine seltene, akute Autoimmunerkrankung, die eine Immunantwort des Körpers gegen Nervenstrukturen darstellt und durch eine schnell einsetzende Lähmung gekennzeichnet ist. GBS erfordert rechtzeitige und wirksame Intervention, um eine langfristige Behinderung zu verhindern. Das Universitätsspital Zürich hat ein Behandlungsschema nach praxisbasierter Expertise entwickelt, das speziell auf die Bedürfnisse von Patient:innen in der akuten Phase des GBS zugeschnitten ist. Um diese Empfehlungen zu stärken und zu ergänzen, wurde eine Literaturrecherche durchgeführt, um evidenzbasierte Behandlungsempfehlungen zu formulieren und das Dokument zu überarbeiten.

Methode

Die Suche erstreckte sich über die Datenbanken PubMed, CINAHL Ultimate und Cochrane Library sowie Grauliteratur-Datenbanken. Es wurden gezielt physiotherapeutische Interventionen während der akuten Phase bei erwachsenen GBS-Patient:innen untersucht. Die Literatursuche erfolgte gemäss den PRISMA-Richtlinien. Es wurden zwei Suchstrategien angewendet, um Interventionen und Guidelines in der akuten Phase zu identifizieren.

Ergebnisse

Vier relevante Artikel wurden identifiziert, die hauptsächlich auf Expert:innenmeinungen und Literaturübersichten beruhen. Die Ergebnisse betonen die Bedeutung interdisziplinärer Zusammenarbeit, wobei Physiotherapeut:innen eine entscheidende Rolle bei der Rehabilitation und Mobilität von GBS-Patient:innen spielen.

Diskussion/Schlussfolgerung

Ein zentrales Problem besteht darin, dass die identifizierten Artikel in erster Linie auf Expert:innenmeinungen, Casereports und Literaturübersichten basieren, statt auf kontrollierten klinischen Studien. Die Vielfalt der präsentierten Informationen und das Fehlen von Dosierungsinformationen kann zu unterschiedlichen Ansätzen in der klinischen Praxis führen, was die Standardisierung und Vergleichbarkeit von Behandlungsergebnissen erschwert. Dies unterstreicht den Mangel an ausreichender Evidenz, um Richtlinien für physiotherapeutische Intervention bei GBS-Patient:innen während der akuten Phase formulieren zu können. Die Behandlungsempfehlung dieser Arbeit sollten entsprechend mit Vorsicht angewendet werden. Zukünftige Bemühungen sollten auf hochwertiger Forschung basieren, um evidenzbasierte Leitlinien für die GBS-Behandlung zu etablieren und so die Versorgung und Ergebnisse für GBS-Patient:innen zu verbessern.

Statement des Praxispartners

Matin hat während seines Praktikums einen wesentlichen Beitrag zur Entwicklung eines physiotherapeutischen Behandlungsleitfadens für Guillain-Barré-Patient:innen auf der Normalstation geleistet, indem er sich intensiv mit dieser spezifischen und komplexen Thematik auseinandersetzte. Durch seine sorgfältige Recherche und Zusammenstellung evidenzbasierter Empfehlungen hat er einen wichtigen Beitrag zur Verbesserung und Vereinheitlichung der Behandlungsqualität geleistet. Wir sind beeindruckt von seinem Engagement und seiner Fähigkeit, tiefgreifendes Wissen effektiv zusammenzufassen und zu präsentieren und danken ihm für seinen wertvollen Beitrag.

Manuel Monteiro Alves, PT, MSc
Universitätsspital Zürich, Therapie Kliniken NORD

Akute Auswirkung auf das kardiale System bei einem Ausdauertest mit und ohne Blutflussreduktion – Ausschnitt einer vierarmigen Crossover Studie

Sabrina Reichel

Betreuungsperson:
Manuel Kuhn, PT, MSc

Ausgangslage

Herzkreislauferkrankungen sind die häufigste Todesursache in der Schweiz. Die COVID Auswirkungen haben in den letzten Jahren zu einem massiven Anstieg der Zahl der Herzkreislauferkrankungen geführt. Ein Blood-Flow-Restriction-Training (BFR) ist eine Methode bei der schnelle Trainingsanpassungen mit niedrigen Intensitäten bewirkt werden kann. Die Frage ist, wie unterscheiden sich die akuten Reaktionen der Herzfrequenz und des Blutdrucks bei einem Ausdauertest mit und ohne BFR (auch Traditional genannt) voneinander?

Methode

Dieser randomisierte kontrollierte Studienarm führt ein Ausdauertest mit und ohne BFR auf dem Fahrradergometer durch. Als Baseline-Messung wird eine VO_2peak-Messung mit allen 24 Proband:innen durchgeführt. Diese dient als Grundlage um die maximale Arbeitsleistung (PWR) bei dem BFR-Test auf 50 % einzustellen und beim Traditional auf 65 %. Während der Testdurchführung werden verschiedene Daten wie Blutdruck, Herzfrequenz, Atemluft und die Borg Skala erhoben. Als Outcome dienen die Herzfrequenz und der Blutdruck, um die akute kardiale Belastung widerzuspiegeln. Die Hypothese wurde mit einem gepaartem t-Test getestet. Das Signifikanzniveau wurde auf alpha (α) = 0.05 festgelegt.

Ergebnisse

24 Proband:innen (33,3 % weiblich, Durchschnittsalter 29,8 Jahre) durchliefen die Austestungen. Die Diastole zeigte einen signifikanten Unterschied zwischen den Tests mit einem p-Wert von 0,0006125 und einem 95 % Konfidenzintervall von (–21,89 bis –7,16). Der Mittelwert der Differenz zwischen den Tests lag bei –14,526 mmHg. Die Herzfrequenz und der systolische Blutdruck zeigten keine signifikanten Veränderungen zwischen einem Test mit BFR zum Traditional-Test.

Diskussion/Schlussfolgerung

Entgegen unseren Ergebnissen zeigen andere Studien eine Erhöhung der Herzfrequenz bei der Testdurchführung mit BFR. Veränderungen der Diastole wurden nicht berichtet. Einschränkungen wie das nicht Verblinden der Proband:innen könnten die Ergebnisse beeinflusst haben. BFR ist ein vielversprechendes Instrument zur Beschleunigung der Rehabilitation. Weitere Forschung ist erforderlich, um die langfristigen Auswirkungen von BFR auf die kardiale Gesundheit zu untersuchen.

Statement des Praxispartners

Sabrina Reichel hat uns in der Klinik für Pneumologie am Universitätsspital Zürich bei der Erhebung von klinischen Trainingsdaten unterstützt. Dabei musste sie sich innerhalb kurzer Zeit in das Forschungsgebiet einarbeiten. Diese Herausforderung hat Sabrina ausgezeichnet gemeistert und konnte unter Supervision Messungen selbstständig durchführen. Durch ihre Mithilfe konnten wird die Studie zeitnahe fertigstellen. Wir möchten uns bei Sabrina für ihren Einsatz herzlich bedanken.

Manuel Kuhn, PT, MSc
Universitätsspital Zürich, Abteilung für Pulmologie

Creation of the manual for the physical examination for the LIFDI project

Benjamin Risch

Betreuungsperson:
Andrea Aegerter, PT, PhD

Background

Non-specific low back pain (NSLBP) is a leading cause of disability globally. Exercise therapy has been shown to reduce pain and disability caused by NSLBP. The Lucerne Integrated Functional Diagnostics and Intervention (LIFDI) project aims to compare personalized exercise therapy with standard approaches. This work outlines the development of a physical assessment manual for personalized NSLBP management.

Methods

This project, from January to June 2024, developed a physical assessment manual over 150 hours, employing an iterative nine-step process. This included identifying contextual determinants, forming an expert panel, selecting tests, and arranging them logically. The manual›s evolution followed a funnel approach, progressing from broad to specific test selection. A panel of three NSLBP specialists guided the process.

Results

The physical examination manual development identified 6 contextual determinants. From the ICF Core Set, 4 domains were selected, refined into 20 subdomains, and further into 30 sub-subdomains. 32 specific tests, ranked by contextual factors, were included in the manual.

Discussion/Conclusion

Although little is known about their psychometric properties, a number of tests were included to assess movement, muscle composition and neurological involvement. Although these tests are commonly used, their clinical validity may be low, making it difficult to interpret and compare results.

This work developed a physical examination manual for the LIFDI project, detailing the selection and refinement of relevant domains from the ICF core set. Expert consultation was integral and limitations such as selection bias and time constraints should be considered. The manual will advance the LIFDI project and inform personalised exercise programmes.

Statement des Praxispartners

Wir möchten Benjamin herzlich für seine herausragende und selbstständige Arbeit im Rahmen des LIFDI-Projekts danken. Trotz herausfordernder Rahmenbedingungen hat er es geschafft, mit grosser Eigenständigkeit und Zuverlässigkeit einen wertvollen Beitrag zur Entwicklung eines physischen Untersuchungsmanuals für die individualisierte Behandlung von unspezifischen Rückenschmerzen zu leisten. Seine Fähigkeit, sich schnell und effektiv in komplexe Themen einzuarbeiten, hat die Zusammenarbeit äusserst angenehm und produktiv gemacht.

Dank Benjamins Engagement und wissenschaftlicher Genauigkeit wurde ein wichtiger Grundstein für die weitere Forschung und Anwendung des LIFDI-Projekts gelegt. Wir sehen in ihm grosses Potenzial für eine erfolgreiche Karriere in der angewandten Forschung und sind zuversichtlich, dass er auf diesem Gebiet wertvolle Beiträge leisten wird.

Die Universität Luzern ist stolz darauf, Benjamin auf diesem Weg unterstützt zu haben und dankt ihm für seine wertvollen Beiträge. Wir wünschen ihm für seine zukünftigen Projekte und seine berufliche Laufbahn weiterhin viel Erfolg und alles Gute.

Andrea Aegerter, PT, PhD
Universität Luzern, Fakultät für Gesundheitswissenschaften und Medizin

Theoretisches Implementierungskonzept von ‹Patient Reportet Outcome Measures› bei Schulterpathologien am Liechtensteinischen Landesspital

Benjamin Risch

Betreuungsperson:
Hannes Rümmele, PT

Ausgangslage

Diese Arbeit untersucht die mögliche Integration von ‹Patient Reported Outcome Measures› (PROMs) in die Physiotherapie am Liechtensteinischen Landesspital (LLS). Der Nutzen ist eine ganzheitliche Beurteilung von Patienten. Das Projekt umfasst die Suche nach validierten Fragebogen für Schulterverletzungen. Das Ziel besteht darin, die Patientenversorgung zu verbessern, indem neben objektiven auch subjektiven Parameter untersucht und eingebunden werden.

Methode

Die Literaturübersicht erstreckte sich von Juli bis September 2023 und nutzte PubMed, wobei der Fokus auf schulterbezogenen Fragebögen lag, die auf Deutsch validiert sind. Mittels lesen des Titels und Abstracts sowie dem Anwenden von Einschluss- und Ausschlusskriterien konnten relevante Studien identifiziert werden.

Ergebnisse

Die Datenbanksuche ergab 50 Treffer, von denen 36 Studien ausgeschlossen wurden. Durch Überprüfung von Titel, Zusammenfassung und dem Abgleichen mit den In-/Exklusions Kriterien wurden 4 Studien zur Schulterbewertung ausgewählt. Validierte deutsche Fragebögen wie der Shoulder Pain and Disability Index «SPADI», der Disability of Arm, Shoulder, Hand «DASH» oder der Oxford Shoulder Score «OSS» sowie der Western Ontario Shoulder Instability Index «WOSI» wurden abgedeckt.

Diskussion/ Schlussfolgerung

Diese Arbeit konzentrierte sich auf PROMs für Schulterpathologien. Der «SPADI» wurde aufgrund seiner breiten Anwendbarkeit für die Implementierung ausgewählt. Die Arbeit stellte einen validierten Fragebogen zur Bewertung von Schulterproblemen bei LLS-Patienten zur Verfügung und kann als Grundlage für einen Implementierungsprozess verwendet werden. Die Verwendung des besagten Fragebogens ermöglichte den Therapeuten die Messung subjektiver Beschwerden. Die Arbeit bietet die Grundlage für ein ganzheitliches Patientenmanagement, was zu einer verbesserten Hypothese und Therapie von Schulterproblemen beitragen könnte.

Statement des Praxispartners

Grundbaustein jedes therapeutischen Berufes ist die stetige Weiterentwicklung. Diese Entwicklung bezieht sich auf Wissen und Fähigkeiten. Bereits im ersten Gespräch mit Benjamin wurde mir klar, dass ich es mit einer Person zu tun habe, die diese stete Entwicklung anstrebt. Die Themenfindung gestaltete sich einfach und war durch konstruktive Diskussionen geprägt. Die Umsetzung fand in engem Kontakt und stetem Austausch statt. Wir, als routiniertes Team, haben sehr von den Inputs durch Benjamin bezüglich der «Patient Reportet Outcome Measures» profitiert und danken Ihm für die geleistete Arbeit.

Hannes Rümmele, PT
Landesspital Liechtenstein, Physiotherapie

Wenn Sie mehr erfahren möchten über unsere Projekte aus Fachentwicklung und Forschung, können Sie uns gerne kontaktieren unter der E-Mail-Adresse:

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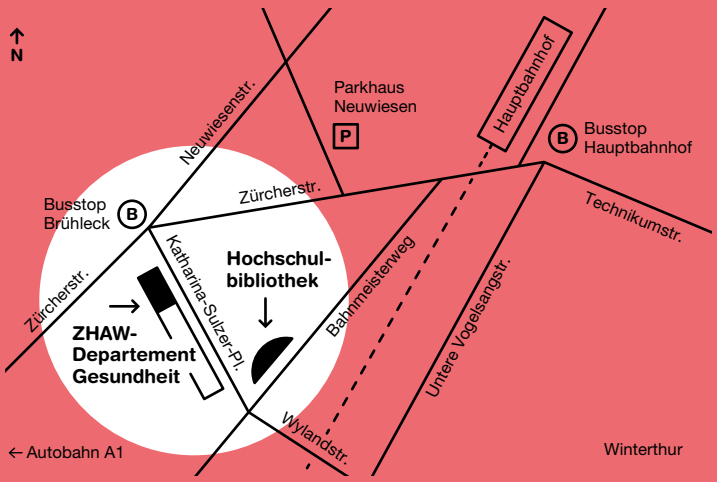

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