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external rotation, shoulder external rotation and elbow extension especially between the younger and the older age groups. The results regarding the differences between sides showed a statistically significant difference for 29 of the 60 motions measured. The results showed that there is a significant difference between sides for some specific movements, however, the implications of these changes are still unknown.

Longitudinal excursion and strain in the median nerve during novel nerve gliding exercises for carpal tunnel syndrome

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The aim of this study was to investigate whether different types of nerve gliding exercises are associated with differences in longitudinal excursion and strain in the median nerve at the wrist. Six mobilisation techniques involving the wrist and elbow were evaluated, including a technique that is believed to result in a large excursion with minimal strain ('sliding technique'). With a 'sliding technique', it is assumed that an increase in strain due to nerve bed elongation at one joint (e.g. wrist extension) is counterbalanced by a simultaneous decrease in length of the nerve bed at an adjacent joint (e.g. elbow flexion). Longitudinal excursion (digital calliper) and strain (differential variable reluctance transducer) were measured in the median nerve of six human cadavers. Results were analysed with a one-way repeated-measures analysis of variance. Nerve gliding associated with wrist movements changed considerably with simultaneous movement of the elbow: the 'sliding technique' resulted in an excursion of 12.4 (\pm 2.6) mm which was at least ~30% larger than other techniques (2–8.9 mm; $p < 0.001$). Strain also differed between techniques ($p < 0.001$). The 'sliding technique' was one of three techniques with the lowest strain values. This study revealed that different types of nerve gliding exercises have largely different mechanical effects on a peripheral nerve. This may have important implications for the selection of safe and effective exercises for CTS. The findings demonstrate that, at least from a biomechanical perspective, nerve gliding exercises should not be regarded as a homogenous group of exercises.

MRI signal intensity change in the cervical extensor musculature is not a feature of persistent idiopathic neck pain

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The purpose of this study was to investigate and quantify MRI measures for fatty infiltrate in the cervical extensor musculature in patients with chronic idiopathic neck pain. We have previously demonstrated the presence of widespread

fatty infiltrate in the cervical extensors in patients with chronic WAD (whiplash associated disorder) but we do not know if similar findings exist in a non-traumatic neck pain population. It was hypothesised that those subjects with persistent idiopathic neck pain would not demonstrate higher fatty infiltrate in the cervical extensor musculature. Twenty-three female subjects with persistent idiopathic neck pain (age: 9.2 \pm 6.9 years, mean duration of symptoms 33.7 \pm 20.6 months) were included in the study. T1-weighted MRI of the cervical spine was performed on all subjects. A measure of relative fat within the muscle was created by developing a pixel intensity profile with MRICro software. MRI measurements were obtained for seven different muscles: rectus capitis posterior minor, major, multifidus, semispinalis cervicis, capitis, splenius capitis and upper trapezius. These were measured across segmental levels (C0–C7). When compared to previous data using the same MRI measure for those with persistent whiplash, these data most closely match the fatty infiltrate values for healthy control subjects. These results indicate that fatty infiltrate in the cervical extensor musculature is not a feature of subjects with persistent idiopathic neck pain. The reasons for these differences in the cervical extensors detected with MRI are not fully understood but could suggest that different processes may be present in insidious onset and whiplash induced chronic neck pain.

Opening the consultation: how is this achieved between patient and physiotherapist?

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Patients often give their reason for seeking health assistance in the opening phase of a health consultation. This opening phase normally involves two parts: first, an opening solicitation spoken by the health professional followed by the patient's reason for the visit. However, how this is accomplished in real-life physiotherapy consultations is not well understood. That is, there has been limited research that has focused on the detailed discursive practices and strategies physiotherapists and patients use to organise problem presentation within real-life consultations. The aim of this presentation is to address this by identifying the discursive practices and strategies that physiotherapists and patients use in the opening phase of an initial consultation. Digital audio-recordings of 98 real-life physiotherapy consultations between 94 patients and 3 physiotherapists comprised the data corpus. This data were analysed using conventions of conversation analysis and discursive psychology. Analysis revealed that physiotherapists opened initial consultations with an offer of service that took the form of either an open-ended general enquiry or closed-ended request for problem confirmation. When consultations were initiated with open-ended general enquiries, patients responded with an immediate presentation of their concerns. When consultations were initiated with closed-ended questions, the presentation of patients' concerns was delayed. The service implication is that how physiotherapists solicit patients' concerns can affect the manner in which patients

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present their problems. This in turn has the potential to affect health care outcomes as well as patient perceptions of physiotherapy.

Patient report outcome measures: balancing the dilemma of professional requirements and clinical practicality

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This paper presents three new short-form Functional Index patient report outcomes (PROs) that provide a simplified approach to balance professional requirements with clinical practicality. The use of PROs is an increasing demand for physiotherapists in order to meet the requirements of government, insurer and professional groups. Physiotherapists find PRO tools an integral part of patient management, apart from the practical dilemma of choice and time demands on both therapists and patients. The balance to this dilemma can be achieved through the use of a minimal number of tools that possess the critical methodological and practical characteristics, and are consistent in format across the critical regions of the spine and the upper and lower limbs. Three short-form PROs have been developed from the existing 25 item Spine, Upper and Lower Limb Functional Index series and are consistent in format and structure. These 10–item tools have an essential quantitative section and optional sections on qualitative patient specific items, duties and an 11–point VAS of overall status. Each tool has demonstrated methodological reliability (ICC 2:1 > 0.94), responsiveness (ES > 1.22), change scores (MDC < 8%), internal consistency (alpha range 0.83–0.91) and all forms of validity including criterion ($r > 0.85$ with all preferred published regional tools). The practical characteristics show brevity (one page), simplicity (three point single line items), efficiency (completion and scoring < 2 minutes) and application across conditions and disease severity ranges. These tools offer a realistic method of recording and managing outcome measures in physiotherapy.

Peak forces on the buttocks in a backward fall and the influence of compliant flooring

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Fall-related vertebral fractures are common and backward falls result in impact to the buttocks and pelvis. Compliant flooring is a promising technique for reducing impact force and risk for vertebral fracture during a fall. However, we have little knowledge of the peak forces applied to the body during a backward fall, or how floor stiffness affects this force. Our goal was to measure the peak vertical force applied to the buttocks in a backward fall from standing, and to determine whether this force is lowered by reductions in floor stiffness. Participants included 11 males, mean age 25 ± 5 (SD) years and body mass mean 81 ± 16 (SD) kg. A tether and electromagnet suddenly released the participant

from a backward lean of 15° , causing him to fall backward onto the ground, which was covered with ethylene-vinyl acetate (EVA) foam rubber. We conducted five trials for each of three foam thicknesses (4.5cm; 7.5cm; 10.5cm). Participants were instructed to avoid contacting the ground with their hands until their buttocks had contacted the ground. We measured peak vertical impact forces applied to the buttocks at 96 Hz with a force plate. An 8–camera, 240 Hz motion measurement system was used to track peak velocity of a skin surface marker on the sacrum. We also modelled peak vertical force for falls onto a rigid (bare) floor. We used repeated measures ANOVA and post-hoc t-tests to compare peak forces between the 3 conditions ($p = 0.016$). There was a significant difference in peak normalised force (N/kg) between falls onto the 10.5cm foam condition compared with the 7.5cm ($p = 0.002$) and 4.5cm ($p < 0.001$) conditions. Peak normalised force (N/kg) was (mean \pm SD) 63.6 ± 6.2 , 59.9 ± 6.2 , and 56.9 ± 5.9 for the 4.5, 7.5 and 10.5cm foam conditions respectively and estimated at 75.3 ± 7.6 for the rigid (bare floor) condition. Compared to the rigid floor, falling onto the 4.5, 7.5 and 10.5cm foam floors provided, on average, 15, 20 and 24% force attenuation. This novel data improves our understanding of this mechanism of vertebral injury and is essential if we are to design techniques for the prevention of spine injury (i.e. protective equipment, safe movement environments). Peak forces were $5099 \text{ N} \pm 868$ (SD) for the thinnest foam condition, similar to the force required to fracture elderly lumbar vertebrae in vitro [$3009 \text{ N} \pm 1505$ (SD)¹, $6910 \text{ N} \pm 2480$ (SD)²]. A thin (4.5cm) layer of foam overlying the floor can provide 15% force attenuation during a fall onto the buttocks.

Physiotherapists' use of craniocervical instability testing: a survey of members of Musculoskeletal Physiotherapy Australia

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All members of Musculoskeletal Physiotherapy Australia in 2006 were surveyed to ascertain their knowledge and understanding of craniocervical instability (CVI) and their attitudes and current practice regarding screening for CVI. The survey was developed following an extensive review of literature and validated, peer reviewed and piloted. The questionnaire was returned by 538 members (30%). Respondents provided differing definitions of CVI with 54.9% describing it as an anatomical/structural disorder and 29.4% as a biomechanical problem. Whilst the majority of respondents were aware of the existence of published clinical tests for CVI, only 30% stated that they used any in clinical practice. Of 42 published signs and symptoms associated with CVI, only seven were associated with CVI by more than 50% of respondents, most notably dizziness, headache and increased mobility on passive testing. Of the published conditions associated with CVI, only four were judged worthy of testing by more than 30% of respondents, with history of neck trauma and whiplash associated disorders being strongly associated. Support for inclusion of information on CVI in pre-manipulative guidelines was given by 87% of respondents. However, any recommendation for screening