

**Paterno, M. V., Schmitt, L. C., Thomas, S., Duke, N., Russo, R., & Quatman-Yates, C. C. (2019). Patient and parent perceptions of rehabilitation factors that influence outcomes after anterior cruciate ligament reconstruction and clearance to return to sport in adolescents and young adults: a qualitative investigation. *Journal of Orthopaedic & Sports Physical Therapy*, (0), 1-35.**

**Review Submitted by:** Cameron Holshouser, PT, DPT

**Objective:** To explore patient and parent perceptions of key rehabilitation drivers related to outcomes after ACLR.

**Methods:** In this qualitative study, which used an interpretive phenomenological methodology, semi-structured interviews were conducted with patients who had returned to sport after ACLR and with their parents. The interviews asked about respondents' experience with physical therapy and how it related to their outcomes after ACLR. The interviews were recorded, transcribed, and coded. Themes were then identified using open and axial coding processes.

**Results:** There were 3 primary themes that patients and parents perceived as key factors including their rehabilitation outcomes after ACLR: (1) patient attributes (ie, motivation, confidence, accountability, access to resources, and social support), (2) physical therapist-patient relationship qualities (physical therapist as guide, motivator, booster of confidence, fosterer of perseverance, and coordinator of care), and (3) elements of the system (ie, availability and utilization of therapy visits, clinic environment, and coordination among care providers).

**Conclusions:** Patient and parent perspectives of key drivers that influence ACLR rehabilitation outcomes include patient, therapist, and system factors. Developing specific strategies to target these factors may enhance patient and parent perceptions of the experience. The awareness gained from these results provides a foundation for future studies examining how these factors affect outcomes and how to improve rehabilitation after ACLR.

**Commentary:** This was a very interesting article and I would recommend other PTs to read this if they see a lot of adolescents following ACL-R. Approximately 50% of young individuals following ACL-R do not return to the same level of competition and 1/3 of these young patients sustain a second ACL injury within 2 years. It appears that our approach to ACL-R rehab needs to change. This article was a qualitative study that interviewed 10 adolescents (and their parents) who had sustained an ACL tear and had gone through rehab. After analysis they found 3 themes of key factors that affected their rehab: (1) patient attributes, (2) PT-patient relationship qualities, and (3) elements of the system. Each theme had different sub-sets which are shown below.

(1) Patient attributes:

- Motivation / confidence / accountability
  - o Common patient self-perceived qualities that ebbed and flowed during different rehab phases
- Access to resources
  - o Athletic trainers / access to a gym
  - o Had a positive impact on their outcomes
- Social support
  - o Family, friends, coaches

(2) PT-Patient Relationship Qualities

- PT as a...
- Guide
  - o A common theme was a lack of experience and understanding of the postoperative rehab process. Many patients felt the PT provided this information and it was very beneficial.
  - o Many patients and parents thought they would have benefited from a more explicit way of knowing how they were faring in terms of rehab milestones.
- Motivator
  - o Patients felt it was hard to stay motivated due to the lengthy rehab process
  - o Early rehab stage – it was physically challenging which made it a struggle for them mentally and physically
  - o Middle rehab stage – period of frustration and depression that was driven by feeling functional yet still unable to return to activities.
  - o Patients' perceptions of the PT as a motivator were often influenced by the style and personality of the PT
  - o In contrast, some patients felt that their motivation was negatively affected by their PT. Examples including: too easy of exercise, non-functional exercises (with lack of explanation)
- Booster of confidence
  - o Fear and lack of confidence were common themes for many patients and parents
  - o Particularly in the final stage
  - o Greatest fears: fear of reinjury and whether they would be at their pre-injury level
- Coordinator of care
  - o Key stakeholder for the patient's care
  - o Communicating with MD, AT's, coaches, parents

(3) Perceptions of System elements

- Availability and utilization of PT visits
  - o Insurance limitations on number of visits
  - o Many felt that they were cut short near return to sport phase

- Can work out well if patient has access to athletic trainers and/or gym
- Many felt that additional PT visits for a few months after RTS or intermittently within the first year would have been helpful to address new concerns or issues that arose
- Clinic environment
  - Large impact on perceptions of their rehab
  - Equipment and space
  - Friendly environment
- Coordination among care providers
  - Coordination among providers either enhanced or hindered their perceptions of rehabilitation and ultimately their outcomes

I think taking into consideration psychological/social these common themes and applying them to adolescent athletes may positively affect outcomes in combination with standard rehabilitation efforts. It may be important to ask questions early in the rehab process during the evaluation on patient attributes (personality traits, access to resources and social support). Information during this phase may help manage your PT visits. Also, educating the patient and parents about the surgery and rehab stages in depth earlier may help establish realistic expectations further down the road. Finding Booster checkups may be helpful for these patients. I think using specific questionnaires for this population (i.e. ACL-RSI) may help track psychological improvements as well.

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**Citation:** Hopewell S, Copsey B, Nicolson P, Adedire B, Boniface G, Lamb S. Multifactorial interventions for preventing falls in older people living in the community: a systematic review and meta-analysis of 41 trials and almost 20 000 participants. *British Journal of Sports Medicine*. 2019. doi:10.1136/bjsports-2019-100732.

**Review Submitted By:** Jon Lester

**Objective:** To determine the effectiveness of a multifactorial intervention for preventing falls in older people.

**Methods:** The authors searched MEDLINE, EMBASE, CINHALL, CENTRAL and trial registries were utilized to identify qualifying RCTs. They included RCTs that evaluated the effects of a multifactorial fall prevention intervention for community dwellers aged 65 years or older. Intervention programs were compared to either (1) usual care or (2) usual care and non-tailored fall prevention advice. Individuals that were diagnosed with having a stroke or Parkinson's disease were excluded. The primary outcome measure was the rate of falls. Secondary outcomes included the risk of sustaining one or more falls; recurrent falls; one or more fall related fracture; a fall that required hospital admission; and a fall that

required medical attention. Trials needed to have a minimum of a 12 month follow-up. Two authors independently reviewed studies for inclusion. The grading of recommendations, assessment, development and evaluation was used to assess the quality of evidence.

**Results:** 41 trials were included with a total of 19,369 participations (72-85 years old). The most common aspects of interventions were: exercise, environment/assistive technologies, medication review, and psychological intervention (cognitive-behavioral review), Twenty-one trials demonstrated that a fall prevention intervention decreased the rate of falls (RaR 0.79, 95%CI 0.70 to 0.88). Multifactorial interventions may also slightly lower the risk of people sustaining one or more falls (RR 0.95, 95%CI 0.90 to 1.00) and recurrent falls (RR 0.88, 95%CI 0.78 to 1.00). Despite these findings, there was little evidence of intervention benefit for fall-related fractures, falls requiring hospital admission or medical attention and health-related quality of life. The authors reported a difference in the rate of falls in trials where the comparator was usual care but not in trials where the comparator was usual care plus non-tailored falls prevention advice. This suggests that in trials that included a structured falls prevention advice leaflet as the comparator intervention; the potential effectiveness of the multifactorial interventions is reduced.

**Table 1** Effect of multifactorial intervention compared with usual care or usual care plus advice

Outcome	Overall		Effect estimate (random effects) 95% CI	I <sup>2</sup> (%)
	Trials, n	Participants, n		
Rate of falls	20	10116	RaR 0.79 (0.70 to 0.88)	90
Risk of sustaining one or more falls	30	13817	RR 0.95 (0.90 to 1.00)	56
Risk of recurrent falls	15	7277	RR 0.88 (0.78 to 1.00)	46
Risk of fall-related fractures	10	3160	RR 0.73 (0.53 to 1.01)	0
Risk of a fall that required hospital admission	14	5077	RR 1.00 (0.92 to 1.08)	0
Risk of a fall that required medical attention	9	3669	RR 0.98 (0.84 to 1.14)	1
Health-related quality of life	7	2000	SMD 0.13 (-0.01 to 0.26)	52

RR, risk ratio; RaR, rate ratio; SMD, standardised mean difference.

**Conclusions:** A multifactorial fall prevention program was found to be beneficial for reducing rate of falls and the risk for sustaining one or more and recurrent falls in an older population. There is some evidence to suggest that the effect of multifactorial interventions in reducing the rate of falls may be smaller when compared with usual care plus non-tailored falls prevention advice as opposed to usual care only.

**Commentary:** The results of this systematic review and meta-analysis show that a multifactorial intervention program likely aids in reducing fall risk in the older population that we work with in clinic. A primary limitation of this study was the heterogeneous nature of the trials in general, which is understandable given the “multifactorial” criteria (individual components will differ). Additionally, it is worth noting that the multifactorial intervention shows greater effect when compared to a standard control versus a comparator intervention with fall prevention education being provided. However, the

findings of this study show promising evidence of a multifactorial fall prevention intervention, which includes exercise, education, environmental/assistive technologies, medication review, and psychological intervention. When working with an older patient with either a history of falls or objective findings indicating fall risk, this form of programming will likely be beneficial and warranted in the clinical setting.

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**Citation:** Bigouette JP, Owen EC, Lantz BBA, et al. Relationship between sports participation after revision anterior cruciate ligament reconstruction and 2-year patient-reported outcome measures. *The American Journal of Sports Medicine*. 2019;47(9):2056-2066. doi:10.1177/0363546519856348

**Review Submitted By:** Jeff Peckins

**Objective:** To determine if participation in sports is associated with improved patient-reported outcome measures (PROMs) related to activity level, sports function, and knee symptoms two years following revision ACL reconstruction.

**Methods:** The cross-sectional study included 986 patients aged 12 – 65 years old who underwent a revision ACL surgery. Individuals completed a questionnaire at baseline and two years following their revision surgery. Physicians in the study also completed a questionnaire including objective measurements and details of the surgery. The collected information included a variety of PROMs including the IKDC, KOOS, and others. The authors compared the outcomes between those who participated in multiple sports, only one sport, or no sports following the revision.

**Results:** Individuals that did not participate in either one or multiple sports had overall lower median PROM scores at both baseline and 2 year follow-up compared to those who did participate in a sport. The largest difference was noted in IKDC scores, as those who did not participate in a sport had an average of 60, while those did one sport and multiple sports had scores of 77 and 82, respectively, which met the MCID. Individuals who participated in multiple sports and a single sport scored 14 ( $P<.0001$ ) and 12 ( $P<.0001$ ) points higher on KOOS-QOL, respectively. Those who didn't participate in any sports were 2.0-5.7x more likely to report significantly decreased PROMs compared to multiple sport individuals, and 1.8-3.8x more likely to report decreased PROMs compared to single sport individuals.

**Conclusion:** Individuals who participated in either one of multiple sports following revision ACL reconstruction had improved PROMs compared to those who did not, regardless of their baseline activity levels. Participation in multiple sports following a revision ACL reconstruction did not demonstrate a significantly positive outcome in PROMs compared to those who participated in only one sport in most categories.

**Commentary:** It is worth noting that all overall, PROMs improved in all categories following revision ACL reconstruction regardless of participation in a sport or not. The overall trend was that those who participated in multiple sports did slightly better than those who only participated in one sport, however this only reached statistical significant in the WOMAC-Stiffness and Marx Activity scale.

An interesting finding was that all individuals who underwent a revision ACL reconstruction tended to decrease their intensity and frequency of sports participation. The study was not able to conclude the rationale for this, however could either be the natural progression of an athlete as they age, or that those who had a revision surgery were fearful of returning to sports. However the results from this study indicate that participation in sports had correlations with improved outcomes. This would be an important finding to educate patients who are undergoing a revision surgery, especially if they believe that continued sport participation may worsen their outcomes. It is unknown whether being active in sports after revision surgery leads to improved function, or if those with better function and more likely to participate in sports.

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Martin-Gomez, C., Sestelo-Diaz, R., Carrillo-Sanjuan, V., Navarro-Santana, M.J., Bardón-Romero, J., Plaza-Manzano, G., Motor control using cranio-cervical flexion exercises versus other treatments for non-specific chronic neck pain: A systematic review and meta-analysis, *Musculoskeletal Science and Practice* (2019), doi: <https://doi.org/10.1016/j.msksp.2019.04.010>.

Review Submitted By: Matt Fung PT, DPT

**Objective:** To determine whether MC (motor control), using cranio-cervical flexion (CCF), is more effective than other treatments for non-specific chronic neck pain (NSCNP)

**Methods:** Randomized clinical trials (RCT's) and systematic reviews of RCT's comparing MC with other treatments in adults with NSCNP, regarding pain and disability, were included. Risk of bias was analyzed using the Cochrane risk of bias tool. Data was analyzed using a random effects model. Heterogeneity was evaluated using  $I^2$  statistic. The quality of the evidence was measured using the Grading Recommendations Assessment, Development and Evaluation (GRADE) approach.

**Results:** Ten articles were included for qualitative review; nine were used for quantitative analysis about the effect of MC on pain and eight for the analysis regarding disability. The meta-analysis comparing MC versus other treatments showed significant differences regarding pain and disability. The meta-analysis revealed significant differences in the effectiveness of MC reducing pain compared to 'wait and see'. However, no differences were found when compared with "exercise group", "mobilization group", or proprioceptive exercise to reduce pain and disability.

**Conclusion:** The results of this systematic review and meta-analysis have demonstrated that MC exercises reduce pain (measured immediate short-term and short-to medium-term) and disability (when measured short-to medium term) for NSCNP patients. MC seems to be more effective to reduce pain and disability than “other treatments”

**Commentary:** According to the 2017 neck pain CPG, there is Grade B evidence for the use of therapeutic exercise for patients with chronic neck pain associated with alteration in movement. Therapeutic exercise is also recommended (grade C) when the pain is associated with coordination deficits. When it comes to the treatment of NSCNP I feel that this article reinforces that there is more than one way to approach each patient and interventions should be specific for the patient’s complaints and impairments. A multimodal approach centered on education, potentially PNE, may be more effective for these patients with NSCNP as opposed to performing only motor control tasks, mobilizations, or cervicothoracic exercises. As there were no differences found between MC and exercise or mobilization groups in this study. With this being said this article reinforces the benefit of including cranio-cervical flexion motor control exercises in patients’ POC.

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**Glen Whittaker, BPod Hons, et al. (2019) Effectiveness of Foot Orthoses Versus Corticosteroid Injection for Plantar Heel Pain: The SOOTHE Randomized Control Trial. Journal of Ortho Sports Med Volume:49 Issue:7 Pages:491–500 DOI: 10.2519/jospt.2019.8807**

**Submitted By:** Erik Kreil

**Objective:** Compare the effectiveness of foot orthoses and corticosteroid injection for plantar heel pain.

**Methods:** This is a parallel-group, assessor-blinded RCT. Patients with plantar heel pain were given either a prefabricated, arch-contouring foot orthoses or a corticosteroid injection guided by ultrasound. Both groups received plantar fascia and calf stretching programs, as well as education. The foot pain sub scale of the Foot Health Status Questionnaire was used as the primary outcome measure at 4 and 12 weeks.

**Results:** Patients were recruited from the community, and the following participated in this study: 103 participants (40 male, 63 female) aged 21-73. Corticosteroid injection was more effective at relieving foot pain at week 4; however foot orthoses was more effective long-term. Statistically significant results were observed for each outcome but not significant minimal important difference value between interventions for pain outcome. Secondary outcomes, such as foot function, fear-avoidance beliefs, and thickness/ hypoechoogenicity of the plantar fascia were similar between groups.

**Conclusion:** This study suggests the use of corticosteroid injections for short-term relief (4 weeks) with appropriately contoured foot orthoses to be used for long-term (12 weeks) pain relief in addition to a program using stretches and education.

**Commentary:** Both interventions are accepted as beneficial to patients with this pathology, however inconsistencies between research trials muddy the waters to deciding the best intervention choice. This

study adds to an existing body, suggesting that when foot orthoses are appropriately contoured for the patient's foot the intervention may be more beneficial in the long-term. Because the minimal important difference between interventions was not met, we may find that patients may experience similar clinical outcomes. This is important as we attempt to make clinical decisions that is best for the individual patient in front of us.

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**Citation:** M.J. Ernst, et al. Cervical movement sense in those with neck pain compared to asymptomatic individuals. *Musculoskeletal Science and Practice*. 2019;43:64-69.

Review Submitted: Casey B Moler

**Objective:** Examine differences in cervical movement sense (CMS) between age- and gender-matched individuals with NP and asymptomatic controls to determine suitable cut-off measures for clinical interpretation

**Methods:** 76 subjects (38 neck pain and 38 asymptomatic subjects) performed both cervical movement sense patterns (Figure 8-F8 and Zig zag-ZZ) while motion of their laser point was videoed (figure 1.). Independent examiners subsequently rated the videos (real-time) to record the **time** needed and the

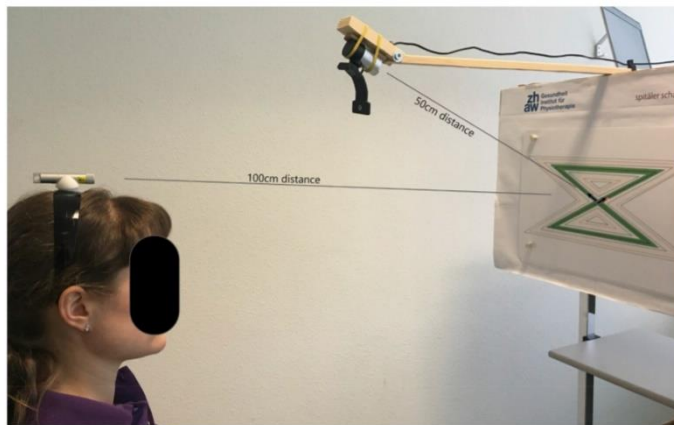


Figure 1

**number of errors** when completing each task. Sensitivity, specificity, and positive and negative likelihood ratios (LR+ and LR-) for various cut-offs to optimize clinical interpretation were determined. Comparisons between.

**Results:** All outcome variables (time and # of errors) except ZZ time were significantly different between individuals with NP and controls. Individuals with NP used more time approximately 4.5 s more for ZZ and had approximately 3-4x more errors ZZ and up to 13 more for F8 compared to the control group. Optimal cut-offs of 9 and 10 errors

yielded LR+/LR- of 3.67/0.17 (F8) and 3.00/0.38 (ZZ). Whiplash patients performed the ZZ task faster with similar errors to those with idiopathic neck pain

**Conclusion:** The clinical utility of this inexpensive measure to assess cervical movement sense in people with neck pain is supported. The number of errors for both the F8 and ZZ pattern demonstrated moderate likelihood ratio and found those with subjects with NP generated significantly more errors for each pattern. However, using the ZZ pattern was found to be superior to figure 8. Cut off scores were found to be 9 for the ZZ pattern and 10 for the F8 pattern.

**Commentary:** Using this movement assessment is a cost-effective, reliable, and clinically applicable alternative test. Utilizing this test can be useful to potentially help identify and quantify patients with NP and abnormal movement sense compared to asymptomatic patients. I think it's important to point out that all neck pain subjects were young individuals with the average duration of neck pain being 67



months. This test is going to be more applicable to this subset of patient population and may have less applicability to those with higher pain levels, disability scores, and cervicogenic dizziness complaints. However, the ability to have an objective measure to assess and reassess to track progress with comparative “normative” values could be extremely useful clinically. The authors encouraged the use of the ZZ pattern as it was found superior to the figure-8 in terms of reliability, clinical feasibility and improved identification between patient with and without neck pain. The results from this study also highlight the usefulness to quantify both the time and number of errors. If I worked in a practice where my caseload consisted of patients with neck pain, had access to this equipment I think this would be rather simple test-retest objective measure to track where a person may lie on the “normal” scale or to use as a means of improvement clinically.