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Can we go wrong with getting strong?

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Background

Nearly 20% of all primary care visits in England are related to painful musculoskeletal conditions (Keavy, 2020) and exercise is often the first-line treatment for managing musculoskeletal pain. Strengthening the muscles around the symptomatic region is a common rationale given by physiotherapists for incorporating exercise in conditions like subacromial pain syndrome (Powell et al., 2022), knee and hip osteoarthritis (Holden et al., 2009; Haber et al., 2023), greater trochanteric pain syndrome (GTPS) (French et al., 2020), low back pain (Gaskell et al., 2019; Cuddy and Gaskell, 2020) and patellofemoral pain (Smith et al., 2017).

Methods

A structured literature search was undertaken on PubMed to identify mediation analysis studies using the terms “mediation analysis”, “mediation”, “pain” and “tendinop*”. Seven-hundred and eighty studies were identified, with seven mediation studies being selected for inclusion after review.

Discussion

Prospective studies highlight strength deficits are not the cause of musculoskeletal conditions like patellofemoral pain syndrome (Rathleff et al., 2014; Neal et al., 2019) with mediation studies establishing that neither knee extensor or hip abduction strength are responsible for reductions in pain in this population group (Holden et al., 2021; 2023) or hip abduction strength in those suffering with GTPS (Mellor et al., 2022). A recent systematic review did not identify any studies examining if improving muscle strength is responsible for reductions in pain in Achilles tendinopathy (Murphy et al., 2023). Furthermore, strength of the trunk or leg muscles in pain-free populations does not predict the onset of low back pain in the future (Sadler et al., 2017) with mediation studies showing an absence in relationship between muscle strength and pain in people with subacromial pain syndrome (Hotta et al., 2022).
There is a paucity of research into the mediating variables of painful musculoskeletal conditions despite entrenched beliefs held by physiotherapists around the role of exercise as a medium to improve muscle strength to reduce pain. The small number of mediation studies to date appear to contradict the common belief that increasing muscle force will reduce musculoskeletal pain. Instead, pain catastrophising, self-efficacy, sleep, cognitive reappraisal, depression, anxiety, and diet are consistently identified as mediating variables for improving pain in musculoskeletal conditions (Alaiti et al., 2022).

**Conclusion**

Contemporary pain science and phenomenology stress viewing musculoskeletal pain as an embodied-embedded experience; unable to separate out the biological, psychological, and social constructs unlike the biomedical or biopsychosocial approach (Stilwell & Harman, 2019). As a team we are now reviewing the delivery of in-service training to address and identify approaches to musculoskeletal rehabilitation that incorporate goal-orientated movement within the embodied-embedded pain paradigm.

**References**


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