

Intermuscular force transmission along myofascial chains. A systematic review

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BACKGROUND Evidence for the existence of myofascial chains is growing [1]. However, the sole existence of intermuscular connections by means of fascial tissues does not imply functional significance and capability for strain transfer.

PURPOSE The present systematic review aims to provide an overview on tensile transmission along myofascial chains based on anatomical dissection studies and in vivo experiments.

METHODS A systematic literature research was conducted in MEDLINE (Pubmed), ScienceDirect and Google Scholar (each 1900-2014). Studied meridians encompassed the superficial backline (SBL), the back functional line (BFL) and the front functional line (FFL) proposed by Myers [2]. Peer-reviewed human anatomical dissection studies as well as in vivo experimental studies reporting intermuscular tension transfer between the constituents of a myofascial meridian were considered eligible. To assess methodic quality, two independent investigators rated each study by means of a validated assessment tool with 13 items (QUACS).

RESULTS Methodological quality of the eight included trials was moderate to excellent. Solid evidence for strain transfer exists for parts of the SBL [plantar fascia / Achilles tendon (two studies), biceps femoris / sacrotuberous ligament (three studies)] and the BFL [latissimus dorsi / contralateral gluteus maximus (three studies)]. One study yields evidence for slight, but no significant force transmission in the FFL (adductor longus / contralateral rectus sheath).

CONCLUSION The results indicate that tension can be transferred between at least some of the examined adjacent structures. Strain transfer might have an impact in radiating pain syndromes and overuse conditions in clinical practice. However, different methods of force application and measurement hinder the comparability of results. Considering anatomical variations in continuity as well as histological differences in the linking structures is thus crucial for interpretation. Future studies should focus on the in vivo behavior of adjacent fascial tissues and muscles during isolated active or passive tensioning.

REFERENCES

[1] Wilke J, Krause F, Vogt L, Banzer W. What is evidence-based about myofascial chains? A systematic review. DGSP; 2014

[2] Myers TW. Anatomy trains: Myofascial meridians for manual and movement therapists. Third edition: Churchill Livingstone; 2013