

IDR4000 Portfolio assessment

Henrik Picton

Assignment 1 - Effect of resistance training on muscle hypertrophy

1.1 Choice of subject

Muscle hypertrophy is the growth of individual muscle fibers that results from an increase in the number of sarcomeres in parallel within the myofibrils (Goldspink, 1970). Traditional resistance training is known to increase hypertrophy, which in turn increase muscle size and strength (Schoenfeld, 2010).

1.2 Finding the literature

All literature discussed in this assignment were accessed through PubMed (*National Center for Biotechnology Information*, n.d.). Only one set of key words was used to find the studies: (((Strength training) AND (muscle hypertrophy)) OR (muscle mass)) OR (lean mass), «clinical trial» or «Randomized controlled trial» published between 2005 and 2025. Of 4121 results 10 studies including a measurement of muscle mass pre and post an intervention were chosen (Table 1).

Table 1: This is table 1

| Author | Design | n | Hypertrophy.measurement |
|---------------------------|-----------|----|--|
| Chaves et al. (2024) | RCT | 39 | VL mCSA (US) |
| Cribb et al. (2007) | RCT | 33 | lean mass (DXA), fiber specific CSA (biopsy) |
| Evangelista et al. (2021) | RCT | 67 | VL, BB, TB, RF and VL MT (US) |
| Kassiano et al. (2023) | RCT | 42 | MGC and LGC (US) |
| Neves et al. (2022) | RCT | 24 | QF mCSA (MRI) |
| Ruple et al. (2023) | RCT | 19 | VL mCSA (US) |
| Schoenfeld et al. (2015) | RCT | 24 | BB + Brachialis, TB, RF, VI, VL MT (US) |
| Schoenfeld et al. (2016) | RCT | 23 | - - |
| Schoenfeld et al. (2019) | RCT | 45 | - - |
| Wohlann et al. (2024) | Quasi-RCT | 81 | PM MT (US) |

Bibliography

Goldspink, G. (1970). The Proliferation of Myofibrils during Muscle Fibre Growth. *Journal of Cell Science*, 6(2), 593–603. <https://doi.org/10.1242/jcs.6.2.593>

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Schoenfeld, B. J. (2010). The Mechanisms of Muscle Hypertrophy and Their Application to Resistance Training. *Journal of Strength and Conditioning Research*, 24(10), 2857–2872. <https://doi.org/10.1519/JSC.0b013e3181e840f3>