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Improving Maximal Strength of Tennis Athletes through Superset Training Method

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Dosen Pembimbing

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INTRODUCTION

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INTRODUCTION

1. What is strength?

- Strength is ability of a muscle to change the shape of a body or change its acceseleration, start or stop the movement of an objec, increase or decrease its speed or make it change direction (faigenbaum et al ., 2007)

- Strength training refers to a specialized conditioning method which an individual work against various resistances improve health, fitness and physical sport performance (pochetti et al., 2018)

a) Why do you need strength?

- Strength will improve physical function and quality of life and reduce the risk of falls (Grgic et al., 2020).

- To reduce the risk of injury, strength training also aims to produce the ability to resist external resistance (Suchomel et al., 2018)

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2. What is super set?

Super set is known as one of the methods that can be used in strengh training, this super set training is an exercise that combines antagonist muscles and combines various forms of exercises that are done sequentially while limiting the duration of rest intervals between exercises. (Bentes et al.,)

When training uses the superset method, the volume and intensity that must be achieved is 60-80% and a short rest interval time of 1 minute (60 seconds) in its application in a moderate number of reps (6-12 reps) with the provision (3-6 sets), while when the load is larger, the volume is lower (80%, 1rm, 3 sets x 8 reps) (Krzysztofik et al., 2019)

Superset exercises can be done approximately half of the traditional training time without sacrificing the volume of training (Iversen et al., 2021).

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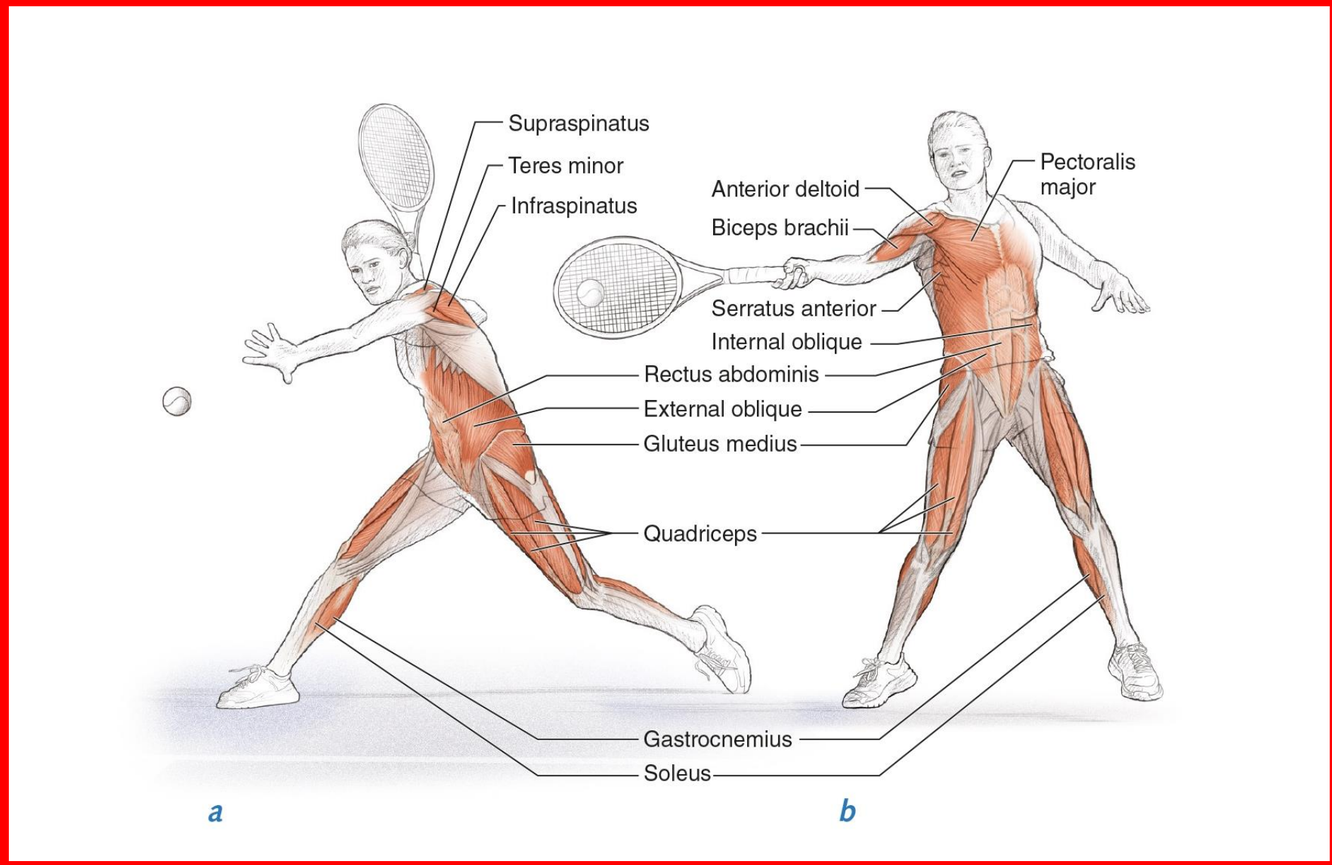
Strength training in tennis

Tennis like any other achievement sport, the strength training aspect is very important for high tennis performance not only to develop strength and power, but to prevent injuries. In addition, ball speed is an important thing that must be considered in the game of field tennis, so to speed the ball, tennis athletes must have strong arms to hit in order to produce a fast ball (Terraza-Rebollo & Baiget, 2021).



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Problem formulation ?

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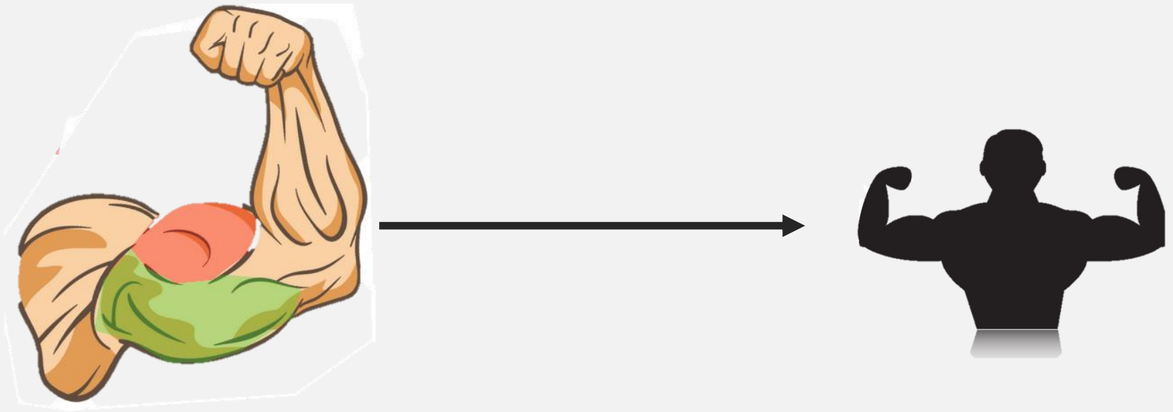

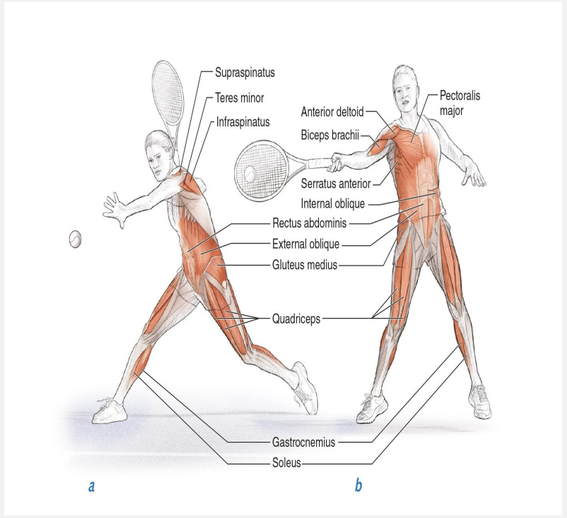

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Result & data analysis

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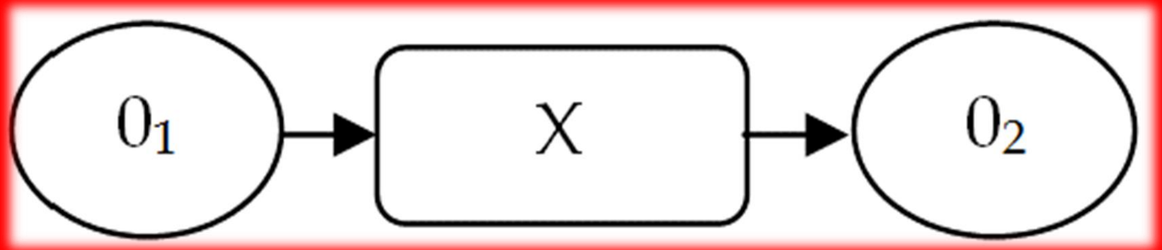
Research Method

Method → Quantitative experimental (**Sugiyono, 2015**)

Design →



In this study, the author uses the one group pre test postest design formula to carry out research and data collection. Arikunto (2010:124) said that one group pretest posttest is a research activity by conducting an initial test (pretest) before being given treatment ended by a final test (posttest).

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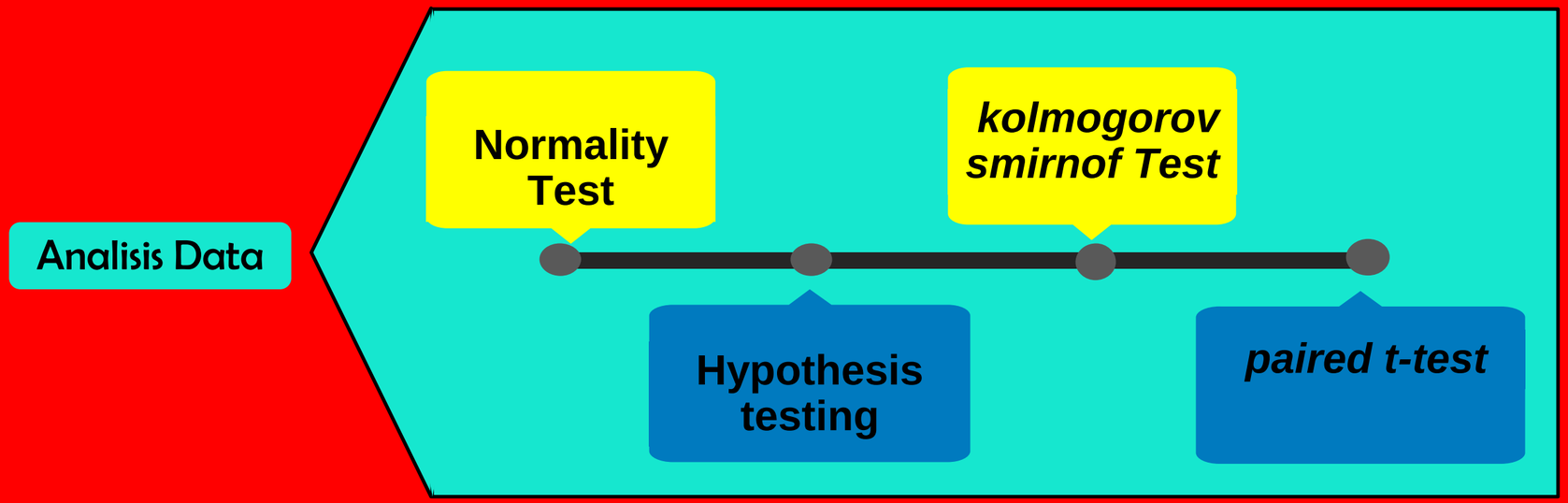
data analysis



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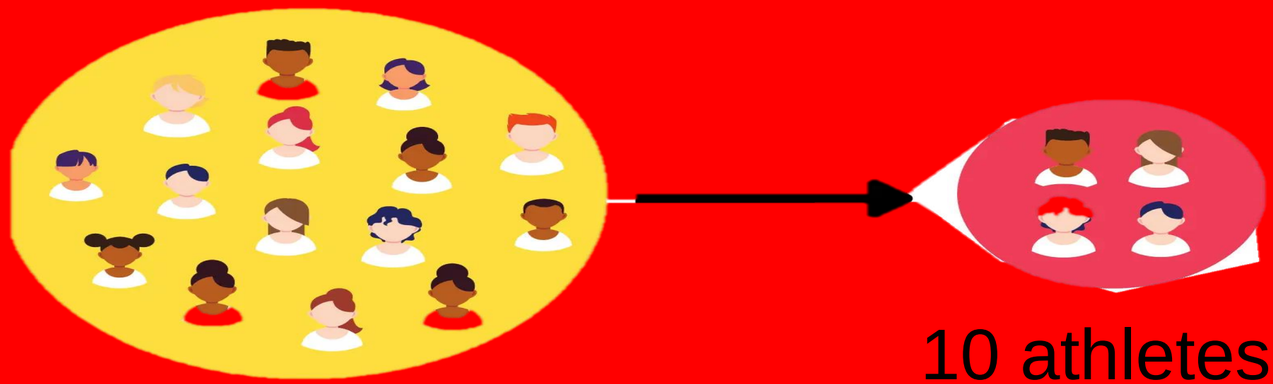
Population & sample

tennis athletes Sportama Klub Kelapa Gading as many as 17 people.



10 athletes with the criteria of age 17-21 years, male height 170cm & female height 160cm & experience playing tennis at least 1 year and a half

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Result & discussion

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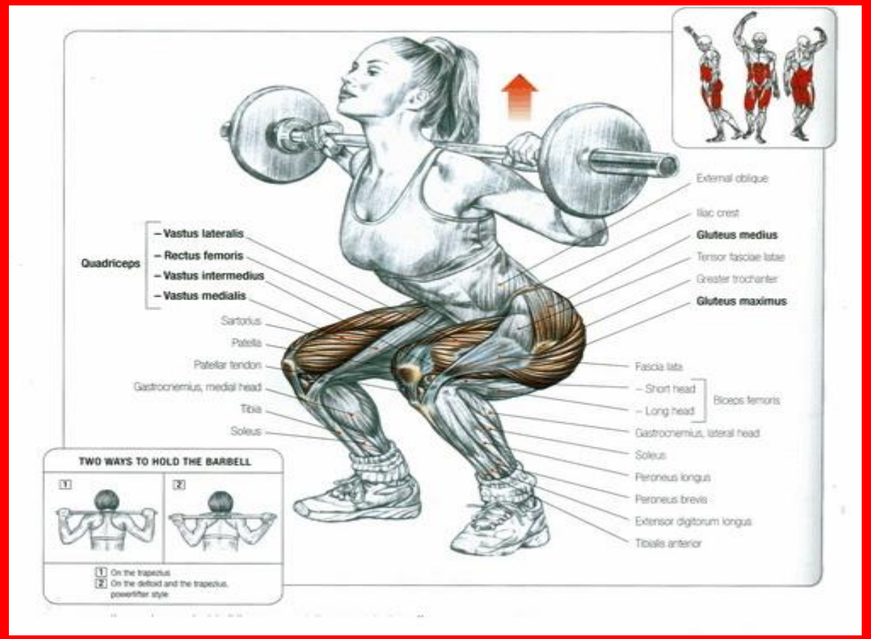
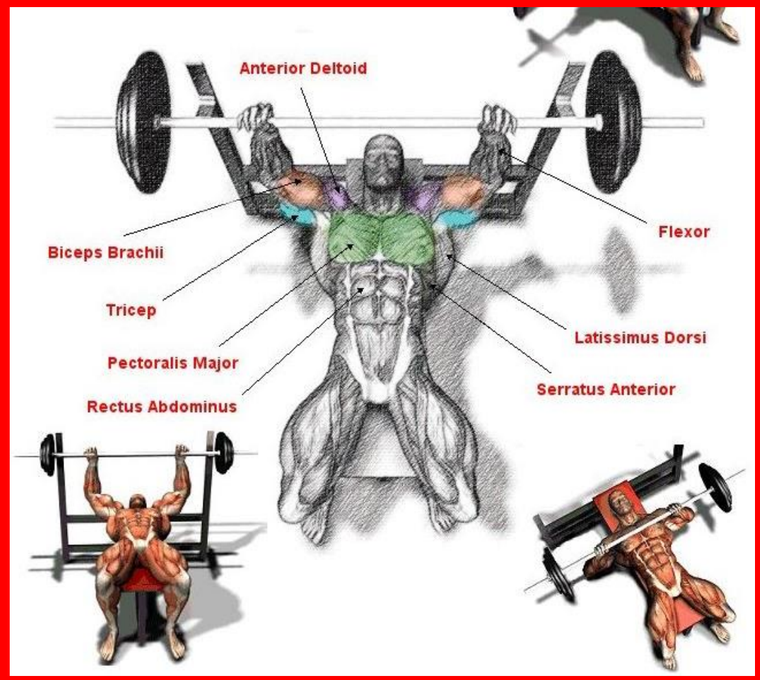
Data Collection Methods

Data were collected through the measurement of 1 maximum rep using bench press and squat before being given the exercise and after being given the superset exercise





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Research Result

Normality Test → (p= 0.200 > 0.05) = Normal

Uji *Paired Sample T-test*

- BP Putri (sig 0,002 < 0.005) = H1 diterima
- BP Putra (sig 0,001 < 0.005) = H1 diterima
- S Putra (sig 0,001 < 0.005) = H1 diterima
- S Putri (sig 0,003 < 0.005) = H1 diterima

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Discussion of finding

Based on the results of the analysis conducted by the researcher, strength training with the super set method on the increase of 1 maximum rep in field tennis athletes was obtained as a result of the average difference in the increase in the men's bench press of 15.00 with an increase of 30.36% and the average difference in the increase in the men's squat of 22.40 with an increase of 26.79%. Meanwhile, the results of the analysis of the average difference in the increase in women's bench press were 7.60 with an increase of 20.21% and the average difference in the increase in women's squat was 11.00 with an increase of 17.97%.

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conclusion

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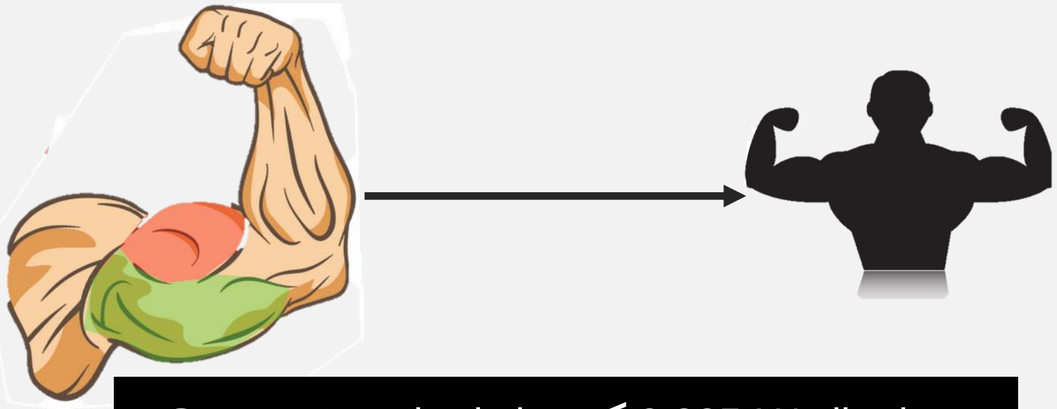
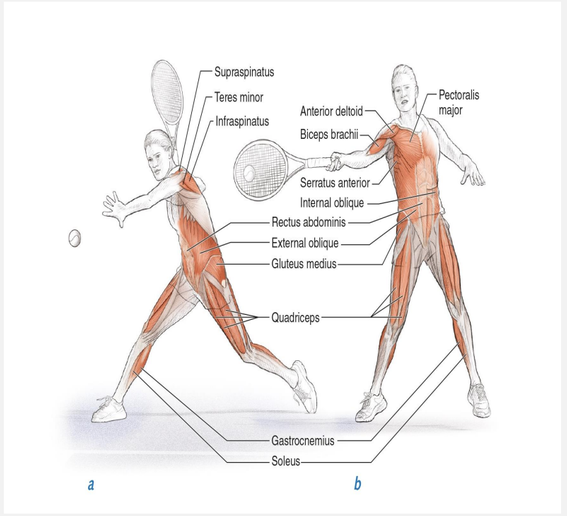


Superset method sig = ≦ 0,005 H1 diterima



It can be concluded that there is a significant effect of strength training with the super set method on the increase of 1 maximum rep in tennis athletes.

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ADVICE

For future researchers, it is expected to involve a larger sample, and use more modern instruments with the intention that the test results can be more accurate.

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References

Benson, A. C., Torode, M. E., & Fiatarone Singh, M. A. (2008). The effect of high-intensity progressive resistance training on adiposity in children: A randomized controlled trial. *International Journal of Obesity*, *32*(6), 1016–1027. https://doi.org/10.1038/ijo.2008.5

Bentes, C. M., Costa, P. B., Corrêa Neto, V. G., Simão, R., Paz, G. A., Maia, M. F., Figueiredo, T., Neto, G. R., Novaes, J. S., & Miranda, H. (n.d.). Hypotensive Responses of Reciprocal Supersets versus Traditional Resistance Training in Apparently Healthy Men. *International Journal of Exercise Science*, *10*(3), 434–445.

Brown, L. E., & National Strength & Conditioning Association (U.S.). (2016). *Strength training*. national strength and conditioning assosiation.

Chen, C., Liang, Z., & Li, S. (2019). The plantar pressure analysis of open stance forehand in female tennis players. *Physical Activity and Health*, *3*(1), 63–70. https://doi.org/10.5334/paah.37

Faigenbaum, A. D., Kraemer, W. J., Blimkie, C. J. R., Jeffreys, I., Micheli, L. J., Nitka, M., & Rowland, T. W. (n.d.). *YOUTH RESISTANCE TRAINING: UPDATED POSITION STATEMENT PAPER FROM THE NATIONAL STRENGTH AND CONDITIONING ASSOCIATION*. www.nsca-jscr.org

Fernandez-fernandez, J., Sanz-rivas, D., Sanchez-mun, C., Pluim, B. M., Tiemessen, I., Mendez-villanueva, A., oz, S.-M., & compari-, A. A. (2009). *A COMPARISON OF THE ACTIVITY PROFILE AND PHYSIOLOGICAL DEMANDS BETWEEN ADVANCED AND RECREATIONAL VETERAN TENNIS PLAYERS*. https://doi.org/10.1519/JSC.0b013e318194208a

Grgic, J., Lazinica, B., Schoenfeld, B. J., & Pedisic, Z. (2020). Test–Retest Reliability of the One-Repetition Maximum (1RM) Strength Assessment: a Systematic Review. In *Sports Medicine - Open* (Vol. 6, Issue 1). Springer. https://doi.org/10.1186/s40798-020-00260-z

Haff, G., Triplett, N. T., & National Strength & Conditioning Association (U.S.). (2015). *Essentials of strength training and conditioning*.

Herman, J. R., Rana, S. R., Chleboun, G. S., Gilders, R. M., Hageman, F. C., Hikida, R. S., Kushnick, M. R., Ragg, K. E., Staron, R. S., & Toma, K. (2010). *Correlation Between Muscle Fiber Cross-Sectional Area And Strength Gain Using Three Different Resistance-Training Programs In College-Aged Women*. http://journals.lww.com/nsca-jscr