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REVIEW ARTICLE

Impact of Variable Resistance Training Duration on Strength, Hypertrophy, and Endurance: A Scoping Review

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Abstract

Background: Resistance training (RT) is widely used to improve muscular strength, muscle hypertrophy, power, and physical function. Repetition duration (RD) is one of the variables that can be modified during resistance exercise, but the relative effects of slower and faster RDs remain unclear. The present review therefore examined the available evidence on the influence of RD during RT on muscular adaptations and performance-related outcomes. **Objective:** To evaluate and summarize the effects of different RDs during RT on muscle strength, hypertrophy, power, and functional performance. **Materials and Methods:** A scoping review was conducted using studies published between 2015 and 2024. Twenty eligible studies involving approximately 700 participants were included. The studies examined different resistance-training approaches, including slow, fast, controlled, self-selected, eccentric, and explosive repetition strategies. The reviewed studies included recreationally active individuals, untrained young adults, collegiate participants, and older adults. Outcomes assessed across the studies included muscular strength, muscle hypertrophy, power, body composition, and functional performance. **Results:** The findings showed that both slower and faster RDs can improve muscular strength and hypertrophy. Several studies reported similar improvements when different RDs were performed with an appropriate training stimulus. Slower or eccentric-emphasized repetitions showed potential benefits for selected measures of muscle hypertrophy and strength in some studies, but these effects were not consistent across all investigations. Faster or explosive repetitions appeared to be more beneficial for power, rapid force production, and explosive performance. The findings also indicated that training volume, intensity, frequency, exercise selection, and participant characteristics may influence the response to RD. **Conclusion:** The available evidence suggests that no single RD is universally superior for resistance-training adaptations. Both slow and fast repetition strategies can be effective for improving strength and hypertrophy, whereas faster and explosive movements may provide greater benefits when power and rapid force production are the primary goals. RD should therefore be selected according to the intended training outcome and considered together with other important resistance-training variables.

Key words: Explosive performance, muscle hypertrophy, muscle strength, physical function, power, repetition duration, repetition tempo, resistance exercise, resistance training, training adaptation

INTRODUCTION

One of the mechanisms that can be involved in increasing muscular hypertrophy and strength and power is the duration of muscle action (MAD). MAD is a method of regulating the muscle's mechanical and metabolic load, which may be involved in altering muscle size.[1]

Muscle-building strength is one of the central elements of conditioning for most sports. Factors, such as volume of workout, intensity, repetitions, sets, and rest between sets and exercises, have been the

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focal points of much scientific investigation into strength training.[2]

The major type of exercise that builds muscular development, stimulates muscle growth, or hypertrophy and strength is resistance training (RT). These adaptations can benefit one's capacity to perform daily activities and improve overall health and well-being indicators, such as physical independence and reduced risk of all cause death. In addition, it has been shown that RT enhances athletes of all levels' sports performance. To optimize muscle growth, modulation of particular RT variables, e.g., training volume (i.e., sets performed per muscle group per week), effort intensity (i.e., closeness to instantaneous muscular failure), and range of motion, is required.[3,4]

By modifying the duration of certain phases, RT with a varying movement tempo (deliberate or incidental) can induce significant gains in muscular strength and power. A change of movement tempo at a specific load will instantly modify the time under tension (TUT) and, consequently, the overall training volume, which will affect the development of power and muscle strength.[5]

TUT is defined as the duration of a single set of exercises, which usually denotes the duration a muscle group was under tension or exerting tension on that specific set of exercises. Both repetition volume and repetition speed influence TUT, which can be numerically described as the product of repeated completions × time taken for each individual repetition (i.e., tempo). Higher-TUT training is associated with lower-external loads, while lower-TUT training is associated with higher-external loads, as long as the repetition tempo is kept constant under conditions (e.g., lower the weight for 2 s, lift the weight for 1 s).[6]

As mentioned earlier, repetition tempo also affects TUT, which is generally defined as the time spent on any one repetition of an RT set. The variable, often separated into eccentric and concentric phases, really refers to whether the lifter is performing a repetition quickly or slowly. Exercise professionals often emphasize executing the concentric or eccentric aspect of a repetition over some amount of time. Repetition tempo is also one of the primary elements that are often referred to when one talks about exercise methods to achieve maximal hypertrophy. The typical RT method generally involves the incorporation of combined concentric and eccentric actions within each repetition, and it has been proposed that both concentric and eccentric actions must be utilized to achieve maximal muscle hypertrophy.[7]

Repetition duration (RD) is an important variable during RT. Training at various rates produces different effects on the muscles. For instance, moving quickly (short RD) tends to produce more force, whereas moving slowly (long RD) maintains the muscle under work for a longer duration. Studies have indicated that both slow and fast movements can result in the same muscle growth. In a particular study, individuals who trained using more rapid repetitions still developed muscle, although they did not always reach the point of full fatigue. Due to this, we still do not entirely understand how the speed of repetitions influences muscle growth when training is taken to the extreme of failure. The other distinction is that quicker repetitions can provide a greater training volume but subject the muscles to tension for significantly less time – occasionally as much as 3 times less – than slower repetitions. This is a balance: Quicker repetitions produce more peak force, whereas slower repetitions sustain the muscle under tension for longer. Ultimately, these two variables can offset each other, and this is the reason why both slow and quick training techniques can produce equal amounts of muscle growth.[8-10]

This research considers the practical application for clinical populations, fitness participants, and athletes, as well as identifying the physiological systems that are manipulated by RD, including mechanical load and metabolic stress. By adjusting repetition velocity to achieve optimal outcomes for muscle strength, hypertrophy, and endurance, exercise professionals might possibly design RT programs that are more effective. Discovery of contradictions and lacunae in the present literature will also assist in directing future research and provide evidence-based training recommendations a firmer basis.

Objectives

Hypothesis

RD modulates RT adaptations, with faster tempos favoring power-related outcomes and slower tempos favoring hypertrophy, while strength adaptations remain similar when training variables are matched.

MATERIALS AND METHODS

Eligibility criteria

- Examined the impact of variable RT (VRT) in athletes, fitness participants, and healthy, recreationally active subjects
- Reported outcomes for functional performance, power, endurance, muscle strength, or hypertrophy
- Tested varied training durations, including acute sessions, short-term (6–8 weeks), medium-term (5–8 weeks), and long-term (12 weeks)
- English-language, peer-reviewed articles
- Observational, experimental, or quasi-experimental designs.

Exclusion criteria

- Post-operative, chronic disease, or rehabilitation populations

- The influence of training duration within VRT is not contrasted or reported within these studies
- Conference abstracts, reviews, commentaries, or case report articles that do not have complete data sets.

Information sources and search strategy

A comprehensive search was conducted across PubMed, Scopus, Web of Science, and SPORTDiscus using keywords and Medical Subject Headings terms, such as "resistance training", "repetition tempo", "repetition duration", "muscular strength," "power," "endurance," "hypertrophy," and "fitness enthusiasts." Manual screening of reference lists from relevant articles supplemented the search.

Selection of sources of evidence

A systematic process of screening was employed. Abstracts and titles were screened independently by two reviewers. Full texts of the potentially eligible studies were assessed against the eligibility criteria. Resolution of disagreements was undertaken through discussion.

Data charting process

To obtain accuracy and minimize bias, two independent reviewers applied a standardized method to extract relevant data in a subset of the reports. Manual key data point extraction was done by reviewers to provide human validation on all data obtained. Discrepancies were resolved in discussion after the final extracted data were compared. Pre-specified criteria and assessor blinding were used to ensure high-quality, professional conduct of investigations and reduction of bias in data extraction. Reporting, detection, performance, and selection biases were assessed for each study.

RESULTS

The inclusion criteria were met by 20 studies published during the period 2015–2024. Collectively, these studies involved approximately 700 participants with diverse backgrounds, such as collegiate athletes, recreationally active individuals, untrained young adults, and older adults residing in the community. Intervention design varied widely from short- and medium-duration programs (6–8 weeks) to long-duration interventions of up to 16 weeks, to acute single-session protocols modulating repetition tempo. Conventional free weights, machines, elastic bands, and variable resistance equipment, such as chains and elastic bands were some of the modalities for RT. Set arrangements differed from low-volume, low-frequency routines to high-volume protocols involving 12 or more exercises per session, and training frequencies differed from 2 to 5 sessions/week.

A total of 20 studies published between 2015 and 2024 fulfilled the eligibility criteria for this scoping review. Together, the studies included approximately 700 participants. The participants were not from a single population; they included recreationally active people, untrained young adults, collegiate women, and older adults living independently in the community. The studies also differed considerably in their training protocols. Some investigations examined a single training session, whereas others followed participants for 6–8 weeks or as long as 16 weeks. RT was performed using free weights, machines, elastic bands, chains, and combinations of these methods. Training frequency generally ranged from 2 to 5 sessions/week.

The findings showed that RT improved muscular strength in most of the included studies, but the results did not indicate that one particular RD was consistently superior. In several studies, both slower and faster repetitions produced similar improvements when the training load and overall volume were reasonably controlled. For example, Lacerda *et al*. reported that 2 s and 6 s repetition protocols produced comparable changes in 1RM strength and muscle hypertrophy, although the longer RD produced a greater improvement in isometric strength at one specific joint position. Similarly, Chaves *et al*. found that self-selected RD was capable of producing strength and muscle-size improvements comparable to controlled RD.

The studies involving different loads and training structures showed a similar pattern. Ikezoe *et al*. found that both low-load, higher-repetition and high-load, lower-repetition training increased 1RM strength, isometric strength, and muscle thickness. The improvements were observed over the course of the training period, with strength changes appearing earlier than changes in muscle size. No meaningful difference was reported between the two loading conditions. Cholewa *et al*. also reported improvements in lean body mass, thigh muscle size, strength, and power following both moderate- and high-load RT in previously untrained collegiate women.

The results concerning muscle hypertrophy were generally consistent with the strength findings. Most of the studies reported an increase in muscle thickness, cross-sectional area, or lean mass following RT. A slower repetition or a longer eccentric phase appeared to provide some benefit in particular situations, but this was not observed consistently across all muscles or studies. Azevedo *et al*. reported greater hypertrophy of the vastus medialis with a 4 s eccentric phase compared with a 2 s phase, while strength gains were similar between the two protocols. Pereira *et al*. likewise reported greater improvements in biceps brachii size and strength with slow-speed training than with fast-speed training. However, other studies found little or no difference between repetition speeds when the overall training stimulus was comparable.

An important difference was seen when power and explosive performance were considered. Faster or explosive movements generally produced better results for outcomes

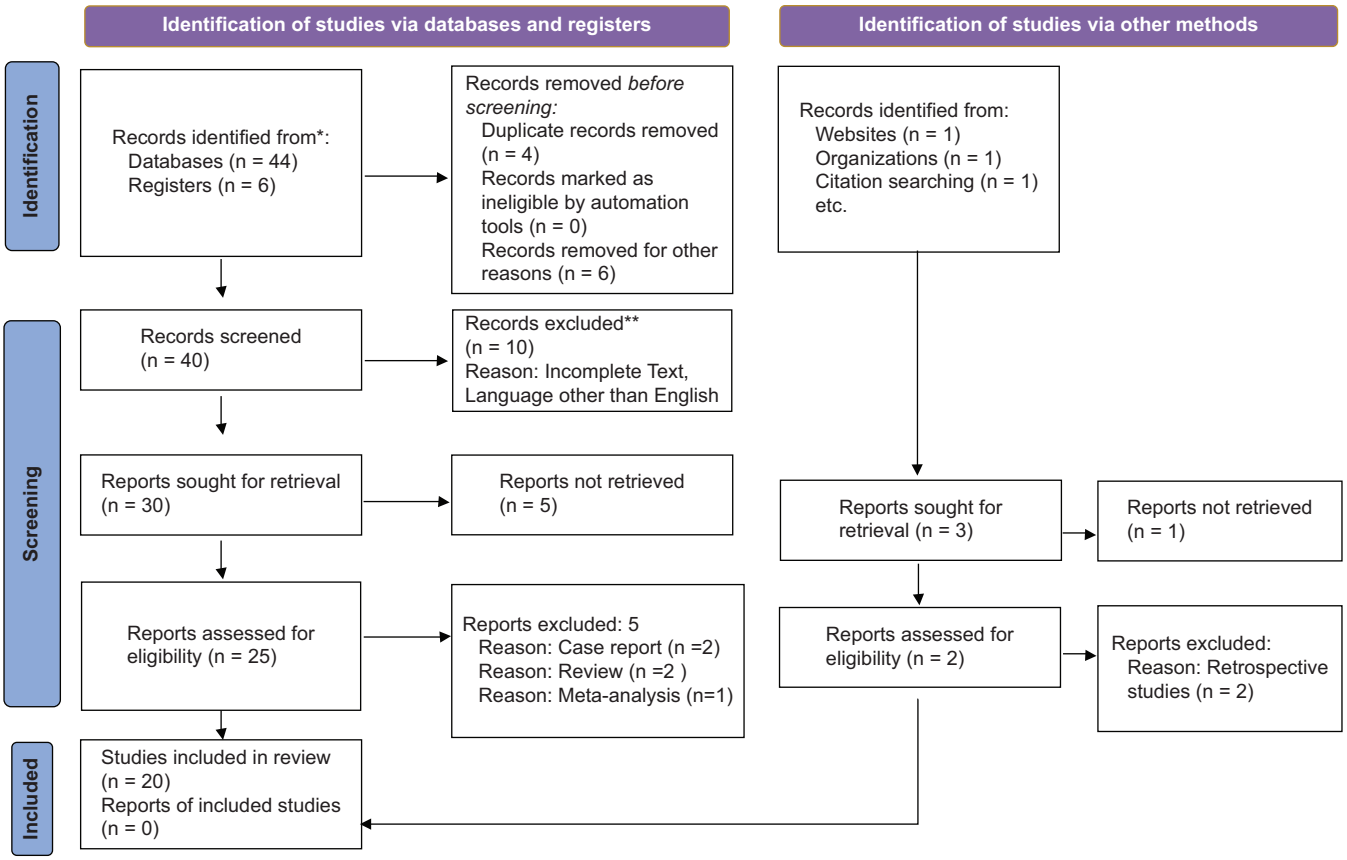


Figure 1: Preferred reporting items for systematic reviews and meta-analyses flowchart of included articles

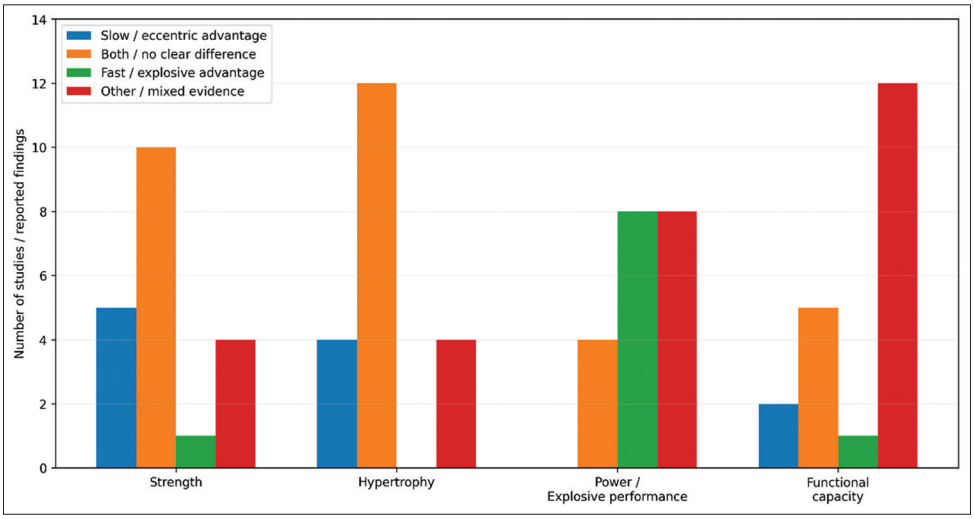


Figure 2: Graphical representation of reported resistance-training outcomes. The overall pattern for strength, hypertrophy, power/explosive performance, and functional capacity

that depended on rapid force production. Balshaw *et al*. found that explosive RT produced greater improvements in rapid torque production and rate of force development, whereas sustained contractions produced greater gains in maximal strength. Other studies also reported improvements in jumping, sprinting, or explosive performance following RT, although the size of the effect varied according to the training program and participant characteristics.

The review also showed that RD should not be considered separately from the other components of RT. Training volume, frequency, load, exercise selection, and the way sets are organized affected the final response [Figures 1 and 2]. For example, Ugurlu *et al*. found improvements in strength, muscle thickness, and power across different training-volume groups, but the moderate-volume group showed better improvements in some outcomes than both the lower- and higher-volume

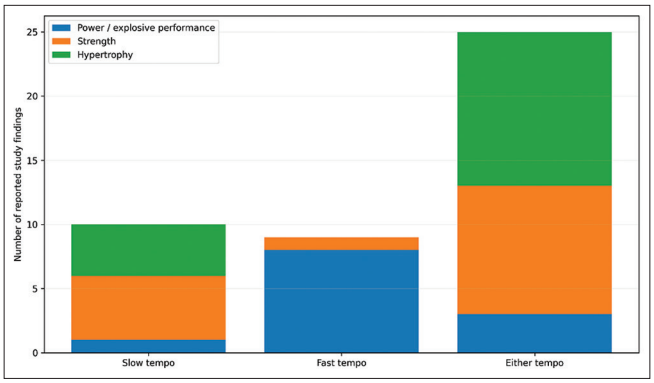


Figure 3: Overall pattern of evidence by repetition tempo. Shows the conceptual relationship between slow tempo, fast tempo, and either tempo for power, strength, and hypertrophy

groups. In another study, Franco *et al*. found similar increases in lean body mass and strength with high- and low-frequency training when the weekly training volume was matched.

The findings in older adults were also encouraging. RT improved strength and physical function in this population, even though the training methods were not identical. Filho *et al*. reported improvements in strength, power, and functional capacity following different forms of RT. After 4 weeks without training, the measured outcomes declined, but they remained above the original baseline values. Ozaki *et al*. similarly reported improvements in strength and physical function following low-load RT, with supervised training showing a greater effect on hypertrophy while strength and functional improvements were similar.

Some studies also demonstrated that changes in training structure could influence the outcome without changing RD itself. Mao *et al*. reported that traditional sets and rest-redistribution sets produced similar improvements in fat-free mass, muscle thickness, strength, and endurance when the total training volume was the same. Evangelista *et al*. found that adding interset stretching to RT resulted in greater improvements in some measures of muscle thickness, although both groups improved strength and hypertrophy. These findings suggest that RD is only one part of the overall training stimulus.

Taken together, the 20 studies suggest that both slow and fast RDs can be used effectively to improve strength and muscle size. The advantage of slower repetitions was more noticeable in a few specific hypertrophy or strength measures, rather than being a consistent finding across all studies. Faster repetitions, on the other hand, appeared to be more useful when the main objective was rapid force production, explosive movement, or power. The results therefore do not support the idea that a single RD is best for every training goal.

Overall, the findings indicate that RD can be adjusted according to the purpose of training. Faster repetitions may be more appropriate when power and explosive performance are the main goals, while slower repetitions can be useful when greater movement control or a longer eccentric phase is desired. For general strength and hypertrophy, either approach may be effective when adequate training load, effort, and volume are maintained. The results also suggest that training frequency, volume, and exercise selection may have an important influence on the final adaptation and should be considered together with RD.

DISCUSSION

Based on the findings of this scoping review, manipulating RD during RT influences muscle strength, power, endurance, and hypertrophy, but its effect appears to be supplementary rather than determinative. Increase in muscle growth and strength was observed consistently across the 20 trials included regardless of whether people exercised at slow, fast, or self-paced tempos. This means that total training intensity, progressive overload, and sufficient volume remain the main adaptation drivers, with RD playing a secondary role that can modify outcomes depending on the circumstances.

Both fast and slow tempos led to large increases in muscle strength, which was one of the most consistent findings in the literature [Figure 3]. Slower, eccentric-emphasized tempos at times offered a slight advantage for local activation of individual muscles, such as the vastus medialis or biceps brachii, and angle-specific strength gains. Yet, strength outcomes were largely equal across tempos when training intensity and load were controlled. No matter the rate of contraction, this illustrates the effectiveness of RT in eliciting neuronal and mechanical adjustments and illustrates how tempo can be used intentionally to produce desired effects.[8,11-13]

The hypertrophy pattern was the same. Whether training was at fast, intentional, or self-selected tempos, most studies recorded gains in muscle cross-sectional area or thickness. Slower tempos will encourage hypertrophy in some muscles, especially when eccentric movements are targeted, based on some evidence, though these benefits weren't found in all cases. Indeed, when training was equated in volume and intensity, several tests revealed no perceivable differences in terms of fast and slow processes. This lends credence to the theory that higher overload and proximity to muscle failure, and not tempo alteration in itself, are the stimuli that have the strongest effect on hypertrophy. Of interest is the fact that other methods, such as incorporating interset stretching, have been shown to make hypertrophic gains. This implies that design changes to training structures could be more influential than tempo alone.[14-17]

Power and explosive execution, however, demonstrated a more definitive separation. Training at more rapid movement velocities consistently exceeded slower tempos

in enhancing jump height, sprint performance, and rate of force development. This supports the velocity specificity principle: Training adaptations are most apparent when the exercise stimulus most closely resembles the desired end-performance. Although slow tempos have been shown to improve control, stability, and muscular endurance, they seem to be less effective in the creation of athletic power based on rapid force production. Athletes involved in sports that demand speed and explosiveness thus cannot do without fast repetition tempos.[18-21]

Conversely, a study on the elderly showed the health and functional benefits of resistance exercise across tempos. The muscle strength, endurance, and physical function of participants improved no matter their speed or slowness in performing the exercises. This benefited their daily activities, such as mobility, sit-to-stand ability, and capacity for walking. Tempos that are slow did not always lead to improved long-term endurance results, even though they increased duration under tension, perceived exertion, and metabolic stress. Although slower tempos are not ideal for power development, they can be beneficial with older or clinical populations because they provide more control, reduce the likelihood of injury, and promote compliance.[22-25]

Although the general conclusions are favorable, there are certain mixed results. Some of them indicate no apparent difference in tempos, whereas others indicate that slower tempos can result in greater muscle growth. Training volume and frequency also appear to interact with tempo in intricate manners. In most instances, training for a moderate amount yields superior outcomes than training excessively or insufficiently. Another restriction is that the majority of studies were only 12–16 weeks long and consisted largely of untrained or recreationally active individuals. This makes it more difficult to understand how RD influences long-term development or how it translates to elite athletes.[26-29]

When taken as a whole, the data support the notion that RD is better examined as an implement which may be tailored for use toward some goals than it is as some fixed indicator of training performance. Although operating with slower tempos when in hypertrophy blocks or recovery, competitors might do well to center fast tempos when in performance blocks. As long as they achieve sufficient training effort, fitness enthusiasts can select any strategy according to their interests and aims. Slower tempos can be particularly valuable for the safety and functional independence of older people.

CONCLUSION

This scoping review shows that RD is a significant but not determining factor for the development of muscular adaptations to RT. Slower and faster tempos are equally effective for enhancing strength, hypertrophy, and functional capacity, assuming training is undertaken with adequate effort, load progression, and volume. Although slower tempos might increase control, stability, and localized hypertrophy, faster tempos better enhance explosive power and velocity-specific performance.

For applied purposes, RD must be customized to specific goals and populations: Athletes can gain an advantage from incorporating quick tempos for power with reserved application of slower tempos during hypertrophy or rehab phases; exercise participants will do just as well with either tempo if effort and volume are sufficient; and older adults or clinical populations can especially gain benefit from slower tempos by increasing safety and motor control.

Recent evidence emphasizes that tempo alone does not determine adaptation, but instead interacts with other variables of RT, such as volume, load, and frequency. Future research should explore long-term interventions, tempo periodization strategies, and interactions with other training parameters to further shape evidence-based recommendations.

REFERENCES

1. Moreno-Villanueva A, Pino-Ortega J, Rico-González M. Effect of repetition duration-total and in different muscle actions-on the development of strength, power, and muscle hypertrophy: A systematic review. Strength Cond J 2022;44:39-56.
2. Wilk M, Golas A, Stastny P, Nawrocka M, Krzysztofik M, Zajac A. Does tempo of resistance exercise impact training volume? J Hum Kinet 2018;62:241-50.
3. DE Camargo JB, Brigatto FA, Zaroni RS, Trindade TB, Germano MD, Junior AC, *et al*. Manipulating resistance training variables to induce muscle strength and hypertrophy: A brief narrative review. Int J Exerc Sci 2022;15:910-33.
4. Androulakis Korakakis P, Wolf M, Coleman M, Burke R, Piñero A, Nippard J, *et al*. Optimizing resistance training technique to maximize muscle hypertrophy: A narrative review. J Funct Morphol Kinesiol 2023;9:9.
5. Lu W, Du Z, Zhou A. Fast and medium tempo resistance training with a low number of repetitions in trained men: Effects on maximal strength and power output. J Hum Kinet 2023;87:157-68.
6. Da Silva JB, Pinheiro Lima V, Silva Novaes J, De Castro JB, Nunes RA, Vale R. Time under tension, muscular activation, and blood lactate responses to perform 8, 10, and 12RM in the bench press exercise. J Exerc Physiol Online 2017;20:41-54.
7. Schoenfeld BJ, Ogborn DI, Krieger JW. Effect of repetition duration during resistance training on muscle hypertrophy: A systematic review and meta-analysis. Sports Med 2015;45:577-85.
8. Lacerda LT, Marra-Lopes RO, Lanza MB, Diniz RC, Lima FV, Martins-Costa HC, *et al*. Resistance training with different repetition duration to failure: Effect on

hypertrophy, strength and muscle activation. PeerJ 2021;9:e10909.
9. Sampson JA, Donohoe A, Groeller H. Effect of concentric and eccentric velocity during heavy-load non-ballistic elbow flexion resistance exercise. J Sci Med Sport 2014;17:306-11.
10. Gonzalez AM, Hoffman JR, Stout JR, Fukuda DH, Willoughby DS. Intramuscular anabolic signaling and endocrine response following resistance exercise: Implications for muscle hypertrophy. Sports Med 2016;46:671-85.
11. Kashiani AB, Soh KG, Soh KL, Ong SL, Kittichottipanich B. Comparison between two methods of variable resistance training on body composition, muscular strength and functional capacity among untrained males. Malays J Mov Health Exerc 2020;9:45-66.
12. Franco CM, Carneiro MA, De Sousa JF, Gomes GK, Orsatti FL. Influence of high- and low-frequency resistance training on lean body mass and muscle strength gains in untrained men. J Strength Cond Res 2021;35:2089-94.
13. Ikezoe T, Kobayashi T, Nakamura M, Ichihashi N. Effects of low-load, higher-repetition vs. High-load, lower-repetition resistance training not performed to failure on muscle strength, mass, and echo intensity in healthy young men: A time-course study. J Strength Cond Res 2020;34:3439-45.
14. Pereira PE, Motoyama YL, Esteves GJ, Quinelato WC, Botter L, Tanaka KH, *et al*. Resistance training with slow speed of movement is better for hypertrophy and muscle strength gains than fast speed of movement. Int J Appl Exerc Physiol 2016;5:1-9.
15. Evangelista AL, De Souza EO, Moreira DC, Alonso AC, Teixeira CV, Wadhi T, *et al*. Interset stretching vs. Traditional strength training: Effects on muscle strength and size in untrained individuals. J Strength Cond Res 2019;33 Suppl 1:S159-66.
16. Ünlü G, Çevikol C, Melekoğlu T. Comparison of the effects of eccentric, concentric, and eccentric-concentric isotonic resistance training at two velocities on strength and muscle hypertrophy. J Strength Cond Res 2020;34:337-44.
17. Azevedo PH, Oliveira MG, Schoenfeld BJ. Effect of different eccentric tempos on hypertrophy and strength of the lower limbs. Biol Sport 2022;39:443-9.
18. Hagerupsen K, Pedersen S, Giller NB, Thomassen NK, Heitmann KA, Sagelv EH, *et al*. Comparison of resistance training using barbell half squats and trap bar deadlifts on maximal strength, power performance, and lean mass in recreationally active females: An eight-week randomized trial. BMC Sports Sci Med Rehabil 2024;16:124.
19. Mao J, Wang T, Wang Y, Kuan G. Effect of resistance training programs differing in set structure on muscular hypertrophy and performance in untrained young men. Front Physiol 2023;14:1301535.
20. Cholewa JM, Rossi FE, MacDonald C, Hewins A, Gallo S, Micenski A, *et al*. The effects of moderate- versus high-load resistance training on muscle growth, body composition, and performance in collegiate women. J Strength Cond Res 2018;32:1511-24.
21. Balshaw TG, Massey GJ, Maden-Wilkinson TM, Tillin NA, Folland JP. Training-specific functional, neural, and hypertrophic adaptations to explosive- vs. Sustained-contraction strength training. J Appl Physiol (1985) 2016;120:1364-73.
22. Ugurlu D, Gülü M, Yapici H, Yagin FH, Comertpay E, Eroglu O, *et al*. Dose-response effects of 8-week resistance training on body composition and muscular performance in untrained young women: A quasi-experimental design. Medicine (Baltimore) 2024;103:e40322.
23. Arazi H, Asadi A, Gentil P, Ramírez-Campillo R, Jahangiri P, Ghorbani A, *et al*. Effects of different resistance training frequencies on body composition and muscular performance adaptations in men. PeerJ 2021;9:e10537.
24. Chaves TS, Biazon TM, Dos Santos LM, Libardi CA. Effects of resistance training with controlled versus self-selected repetition duration on muscle mass and strength in untrained men. PeerJ 2020;8:e8697.
25. Filho MM, Venturini GR, Moreira OC, Leitão L, Mira PA, De Castro JB, *et al*. Effects of different types of resistance training and detraining on functional capacity, muscle strength, and power in older women: A Randomized controlled study. J Strength Cond Res 2022;36:984-90.
26. Duarte Martins A, Paulo Brito J, Fernandes O, Oliveira R, Gonçalves B, Batalha N. Effects of a 16-week high-speed resistance training program on body composition in community-dwelling independent older adults: A clinical trial. Clin Nutr ESPEN 2024;63:84-91.
27. Tomeleri CM, Ribeiro AS, Nunes JP, Schoenfeld BJ, Souza MF, Schiavoni D, *et al*. Influence of resistance training exercise order on muscle strength, hypertrophy, and anabolic hormones in older women: A randomized controlled trial. J Strength Cond Res 2020;34:3103-9.
28. Ozaki H, Sawada S, Osawa T, Natsume T, Yoshihara T, Deng P, *et al*. Muscle size and strength of the lower body in supervised and in combined supervised and unsupervised low-load resistance training. J Sports Sci Med 2020;19:721-6.
29. Martins WR, Safons MP, Bottaro M, Blasczyk JC, Diniz LR, Fonseca RM, *et al*. Effects of short term elastic resistance training on muscle mass and strength in untrained older adults: A randomized clinical trial. BMC Geriatr 2015;15:99.

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