Grounded AI StudyRecon

Muscle Hypertrophy Mechanisms Dataset

Research Prompt

> "Current best understanding of how muscle hypertrophy works and gets optimally triggered"

Contents

Search Results

Muscle Hypertrophy: Definition and Process

Search terms:

- *Definition of muscle hypertrophy*
- *How muscles grow*
- *Process of muscle hypertrophy*

Search Term	Relevant Excerpt	Citation Source
Definition of muscle hypertrophy	... However, it is possible that there is another adaptive mechanism contributing for increasing skeletal muscle size. This mechanism is called hyperplasia, and can be defined as an increase in the cells, or fibers, number in the muscle....	The role of hyperplasia on the increase of skeletal muscle size
Definition of muscle hypertrophy	... Those recommendations are worthwhile only if there is a predictive relationship between the acute response of MPS and subsequent muscle hypertrophy during resistance exercise training. The metabolic basis for muscle hypertrophy is the dynamic balance between the synthesis and degradation of myofibrillar proteins in muscle. There is ample evidence that the process of MPS is much more responsive to exercise and nutrition interventions than muscle protein breakdown....	Making Sense of Muscle Protein Synthesis: A Focus on Muscle Growth During Resistance Training.
Definition of muscle hypertrophy	... The degree of muscular hypertrophy is directly related to the type of exercise and its intensity. Strength training normally produces a hypertrophy of greater magnitude when compared to other types of physical exercise. However, it is possible that there is another adaptive mechanism contributing for increasing skeletal muscle size....	The role of hyperplasia on the increase of skeletal muscle size
How muscles grow	... In summary, this study confirms that exercise selection plays a role in regional hypertrophy. Whilst there may be still other factors that determine how muscles grow, it seems that the chosen exercises may be responsible of the differences observed in this study.	The role of exercise selection in regional Muscle Hypertrophy: A

Search Term	Relevant Excerpt	Citation Source
		randomized controlled trial
How muscles grow	... RESULTS: Load-induced muscle growth is a complex phenomenon that depends on various physiological systems and signaling pathways. Muscle growth occurs through signaling events arising from mechanical stress and consequent muscle protein turnover controlled by the balance between protein synthesis and degradation, which is negatively affected by aging. The authors used the myonuclear domains mediated by muscle satellite cells to explain the molecular machinery of exercise-induced muscle growth and recovery in aging muscles....	Effects of Resistance Exercise Training on Aged Skeletal Muscle: Potential Role of Muscle Stem Cells
How muscles grow	... Outside the muscle fiber, however, is a diversity of mononuclear cell types that reside in the extracellular matrix (ECM). These muscle-resident cells are exercise-responsive and produce the scaffolding for successful myofbrillar growth. Without proper remodeling and maintenance of this ECM scaffolding, the ability to mount an appropriate response to resistance training in adult muscle is severely hindered....	A Glitch in the Matrix: The Pivotal Role for Extracellular Matrix Remodeling During Muscle Hypertrophy.
Process of muscle hypertrophy	... Although both groups are known to display impressive muscularity, it is not clear which method is superior for hypertrophic gains. It has been shown that many factors mediate the hypertrophic process and that mechanical tension, muscle damage, and metabolic stress all can play a role in exercise-induced muscle growth....	The mechanisms of muscle hypertrophy and their application to resistance training.
Process of muscle hypertrophy	... For this purpose, the Scopus and ScienceDirect databases were reviewed, and the PubMed and Google Scholar search engines were used, where 25 articles met the inclusion criteria. Results demonstrated that there are several regulatory genes of muscle hypertrophy, such as MSTN, PGC-1 α, STARS, and JunB, among others, as well as genetic polymorphisms and vital participation of DNA methylation, which together would control signaling pathways and gene networks necessary for the development of this process.	Influence of genetics and epigenetics on the process of muscle hypertrophy: a systematic review
Process of muscle hypertrophy	The present study proposed to determine whether and how this pathway may be involved in resistance training-induced muscle hypertrophy. Skeletal muscle samples were collected from the control, trained (RT), control + SB431542 (CITGF), and trained + SB431542 (RTITGF) animals following 3, 5, and 8 weeks of resistance training....	Resistance training-induced muscle hypertrophy is mediated by TGF-β1-

Search Term	Relevant Excerpt	Citation Source
		Smad signaling pathway in male Wistar rats

Mechanisms of Muscle Hypertrophy

- Muscle Fiber Types and Hypertrophy
- Muscle Protein Synthesis and Hypertrophy

Muscle Fiber Types and Hypertrophy

Search terms:

- *Role of muscle fiber types in hypertrophy*
- *Types of muscle fibers*

Search Term	Relevant Excerpt	Citation Source
Role of muscle fiber types in hypertrophy	... The change in mean 0-48 h type II SC was positively correlated with muscle fiber hypertrophy in type II fibers (r = 0.47; P = 0.035). Furthermore, the change in myonuclei per fiber was positively correlated with type I and type II fiber hypertrophy (both r = 0.68; P < 0.01)....	Satellite cell and myonuclear accretion is related to training-induced skeletal muscle fiber hypertrophy in young males and females.
Role of muscle fiber types in hypertrophy	... Although important effects were revealed on SCs, no significant differences in whole body or leg lean mass were found after the training period. Likewise, only a tendency (P = 0.066) to an increase in type I and II muscle fibre size was reported after the intervention, with no significant differences in fibre type distribution, myonuclear content and domain size. Conversely, functional tests showed significant increases in both muscle strength (leg press: 28%; leg extension: 30%) and VO2peak (absolute: 9%; relative: 8%)....	Effects of combined exercise training in older adults: a potential relationship between muscle fibre satellite cell function and capillarization
Role of muscle fiber types in hypertrophy	This adaptative phenomenon is normally observed in the muscle tissue submitted to a regimen of physical exercises, like strength training. The degree of muscular hypertrophy is directly related to the type of exercise and its intensity. Strength training normally produces a hypertrophy of greater magnitude when compared to other types of physical exercise....	The role of hyperplasia on the increase of skeletal muscle size
Types of muscle fibers	This study describes fiber-type adaptations in hindlimb muscles, the interaction of sex, and the role of hypoxia on this response in 12-wk ⅝ nephrectomized rats (Nx). Contractile, metabolic, and morphological features of muscle fiber types were assessed in the slow-twitch soleus and the fast-twitch tibialis cranialis muscles of Nx rats, and compared with	Slow- and fast-twitch hindlimb skeletal muscle

Search Term	Relevant Excerpt	Citation Source
	sham-operated controls. Rats of both sexes were considered in both groups....	phenotypes 12 wk after ⅝ nephrectomy in Wistar rats of both sexes.
Types of muscle fibers	... The association of ST with ND promoted a modulatory role on the muscle fiber types. There was a hypertrophy of fast twitch fibers (type II) as compared with slow twitch (type I)....	Efeito de diferentes doses de nandrolona associado ao treinamento de força sobre o perfil fenotípico e área de secção transversa do músculo de ratos
Types of muscle fibers	... Cytokines plasma levels were increased in patients without gender influence. Muscle fiber phenotype differences due to gender were similar in both groups, but patients had a lower proportion of type I fibers. Abnormal fibers were increased in both groups of patients, but were present in a higher proportion in female....	Gender differences in COPD patients: Skeletal muscle function and structure

Muscle Protein Synthesis and Hypertrophy

Search terms:

- *Protein synthesis and muscle growth*
- *Role of protein in muscle hypertrophy*

Search Term	Relevant Excerpt	Citation Source
Protein synthesis and muscle growth	The acute response of muscle protein synthesis (MPS) to resistance exercise and nutrition is often used to inform recommendations for exercise programming and dietary interventions, particularly protein nutrition, to support and enhance muscle growth with training. Those recommendations are worthwhile only if there is a predictive relationship between the acute response of MPS and subsequent muscle hypertrophy during resistance exercise training....	Making Sense of Muscle Protein Synthesis: A Focus on Muscle Growth During Resistance Training.
Protein synthesis and muscle growth	... Resistance exercise training (RET) combined with supportive nutrition is an effective strategy to achieve muscle hypertrophy by driving chronic elevations in muscle protein synthesis (MPS). The regulation of muscle protein synthesis is a coordinated process, in requiring ribosomes to translate mRNA and sufficient myonuclei density to provide the platform for ribosome and mRNA transcription; as such MPS is determined by both translational efficiency (ribosome activity) and translational capacity (ribosome number). Moreover, as the muscle protein pool expands during hypertrophy, translation capacity (i.e. ribosomes and myonuclei content) could theoretically become rate-limiting such that an inability to expand these pools through ribosomal biogenesis and satellite cell (SC) mediated myonuclear addition could limit growth potential....	It's not just about protein turnover: the role of ribosomal biogenesis and satellite cells in the regulation of skeletal muscle hypertrophy
Protein synthesis and muscle growth	... The regulation of muscle protein synthesis is a coordinated process, in requiring ribosomes to translate mRNA and sufficient myonuclei density to provide the platform for ribosome and mRNA transcription; as such MPS is determined by both translational efficiency (ribosome activity) and translational capacity (ribosome number). Moreover, as the muscle protein pool expands during hypertrophy, translation capacity (i.e. ribosomes and myonuclei content) could theoretically become rate-limiting such that an inability to expand these pools through ribosomal biogenesis and satellite cell (SC) mediated myonuclear addition could limit growth potential. Simple measures of RNA (ribosome content) and DNA (SC/Myonuclei number) concentrations reveal that these pools do increase with hypertrophy; yet whether these adaptations are a pre-requisite or a limiting factor for hypertrophy is unresolved and highly debated....	It's not just about protein turnover: the role of ribosomal biogenesis and satellite cells in the regulation of skeletal muscle hypertrophy

Search Term	Relevant Excerpt	Citation Source
Role of protein in muscle hypertrophy	... Much of our current understanding of skeletal muscle hypertrophy can be attributed to the development and utilization of stable isotopically labeled tracers. We know that resistance exercise and sufficient protein intake act synergistically and provide the most effective stimuli to enhance skeletal muscle mass; however, the molecular intricacies that underpin the tremendous response variability to resistance exercise-induced hypertrophy are complex. The purpose of this review is to discuss recent studies with the aim of shedding light on key regulatory mechanisms that dictate hypertrophic gains in skeletal muscle mass....	Recent advances in understanding resistance exercise training-induced skeletal muscle hypertrophy in humans
Role of protein in muscle hypertrophy	... Recent evidence suggests that mTORC1 may regulate the polyamine metabolic pathway; however, there is currently no evidence in skeletal muscle. This study examined changes in polyamine pathway proteins during muscle hypertrophy induced by mechanical overload (7 d), with and without the mTORC1 inhibitor, rapamycin, and during muscle atrophy induced by food deprivation (48 h) and denervation (7 d) in mice. Mechanical overload induced an increase in mTORC1 signalling, protein synthesis and muscle mass, and these were associated with rapamycin-sensitive increases in adenosylmethione decarboxylase 1 (Amd1), spermidine synthase (SpdSyn) and c-Myc....	The Regulation of Polyamine Pathway Proteins in Models of Skeletal Muscle Hypertrophy and Atrophy - a potential role for mTORC1.
Role of protein in muscle hypertrophy	It has been well recognized that skeletal muscle mass is regulated by mechanically induced changes in protein synthesis, and that signaling by mTOR is necessary for an increase in protein synthesis and the hypertrophy that occurs in response to increased mechanical loading. However, the role of mTOR signaling in the regulation of protein synthesis and muscle mass during decreased mechanical loading remains largely undefined....	The role of mTOR signaling in the regulation of protein synthesis and muscle mass during immobilization in mice

Training Variables for Muscle Hypertrophy

- Resistance Training and Hypertrophy
- Nutrition and Hypertrophy
- Recovery and Hypertrophy

Resistance Training and Hypertrophy

Search terms:

- *Role of resistance training in muscle hypertrophy*
- *Types of resistance training for muscle growth*

Search Term	Relevant Excerpt	Citation Source
Role of resistance training in muscle hypertrophy	Accordingly, strategies focused on increasing the quality and quantity of skeletal muscle are relevant, and resistance exercise is foundational to the process of functional hypertrophy. Much of our current understanding of skeletal muscle hypertrophy can be attributed to the development and utilization of stable isotopically labeled tracers....	Recent advances in understanding resistance exercise training-induced skeletal muscle hypertrophy in humans
Role of resistance training in muscle hypertrophy	... Infact nutrition play major role to increase muscle growth and strength than training itself. Resistance training is a type of exercise that uses outside resistance to improve hypertrophy, strength, and endurance....	"IMPACT OF RESISTANCE TRAINING ALONG WITH VEGETARIAN AND OMNIVOROUS DIET ON MUSCLE GROWTH AND MUSCLE STRENGTH: A COMPARATIVE STUDY"
Role of resistance training in muscle hypertrophy	Therefore, understanding the regulation of muscle mass is of significant importance. Resistance exercise training (RET) combined with supportive nutrition is an effective strategy to achieve muscle hypertrophy by driving chronic elevations in muscle protein synthesis (MPS). The regulation of muscle protein synthesis is a coordinated process, in requiring ribosomes to translate mRNA and sufficient myonuclei density to provide the platform for ribosome and mRNA transcription; as such MPS is determined by both translational efficiency (ribosome activity) and translational capacity (ribosome number)....	It's not just about protein turnover: the role of ribosomal biogenesis and satellite cells in the regulation of skeletal

Search Term	Relevant Excerpt	Citation Source
		muscle hypertrophy
Types of resistance training for muscle growth	... There have now been over 50 studies carried out in older subjects, of ages up to 97 years! Most of these have demonstrated that resistance exercise can produce substantial increases in muscle strength and power and more limited, but nevertheless significant, increases in muscle mass and muscle fibre cross-sectional area (CSA) (Frontera et al. 1988; Skelton et al. 1995; Young, 1997)....	Grandad, it ain't what you eat, it depends when you eat it - that's how muscles grow!
Types of resistance training for muscle growth	Muscle is a highly adaptable tissue that responds to resistance exercise (RE; loading) by hypertrophying, or during muscle disuse, RE mitigates muscle loss. Resistance exercise training (RET)–induced skeletal muscle hypertrophy is a product of external (e.g., RE programming, diet, some supplements) and internal variables (e.g., mechanotransduction, ribosomes, gene expression, satellite cells activity)....	An Evidence-Based Narrative Review of Mechanisms of Resistance Exercise–Induced Human Skeletal Muscle Hypertrophy
Types of resistance training for muscle growth	Muscle is a highly adaptable tissue that responds to resistance exercise (RE; loading) by hypertrophying, or during muscle disuse, RE mitigates muscle loss. Resistance exercise training (RET)–induced skeletal muscle hypertrophy is a product of external (e.g., RE programming, diet, some supplements) and internal variables (e.g., mechanotransduction, ribosomes, gene expression, satellite cells activity). RE is undeniably the most potent nonpharmacological external variable to stimulate the activation/suppression of internal variables linked to muscular hypertrophy or countering disuse-induced muscle loss....	An Evidence-Based Narrative Review of Mechanisms of Resistance Exercise–Induced Human Skeletal Muscle Hypertrophy

Nutrition and Hypertrophy

Search terms:

- *Importance of nutrition for muscle growth*
- *Macronutrient requirements for hypertrophy*

Search Term	Relevant Excerpt	Citation Source
Importance of nutrition for muscle growth	... To maximize their result, along with training, they know the importance of correct food for their growth. Infact nutrition play major role to increase muscle growth and strength than training itself. Resistance training is a type of exercise that uses outside resistance to improve hypertrophy, strength, and endurance....	"IMPACT OF RESISTANCE TRAINING ALONG WITH VEGETARIAN AND OMNIVOROUS DIET ON MUSCLE GROWTH AND MUSCLE STRENGTH: A COMPARATIVE STUDY"
Importance of nutrition for muscle growth	... Nevertheless, it would make sense to find ways of increasing muscle mass in the elderly, not only because muscle strength and functionality would probably be improved more but also because of the attendant metabolic advantages in having a high lean to fat weight body ratio, including increases in glucose tolerance and the capacity to oxidize fat. The paper published in this issue of The Journal of Physiology by Esmarck et al. (2001) provides us with some very interesting insights into the nutritional control of muscle mass. What Birgitte Esmarck and her colleagues have done is to demonstrate that, for the elderly, it matters considerably when a person eats a protein meal after having done some exercise....	Grandad, it ain't what you eat, it depends when you eat it - that's how muscles grow!
Importance of nutrition for muscle growth	Therefore, understanding the regulation of muscle mass is of significant importance. Resistance exercise training (RET) combined with supportive nutrition is an effective strategy to achieve muscle hypertrophy by driving chronic elevations in muscle protein synthesis (MPS)....	It's not just about protein turnover: the role of ribosomal biogenesis and satellite cells in the regulation of skeletal

Search Term	Relevant Excerpt	Citation Source
		muscle hypertrophy
Macronutrient requirements for hypertrophy	... Moreover, as the muscle protein pool expands during hypertrophy, translation capacity (i.e. ribosomes and myonuclei content) could theoretically become rate-limiting such that an inability to expand these pools through ribosomal biogenesis and satellite cell (SC) mediated myonuclear addition could limit growth potential. Simple measures of RNA (ribosome content) and DNA (SC/Myonuclei number) concentrations reveal that these pools do increase with hypertrophy; yet whether these adaptations are a pre-requisite or a limiting factor for hypertrophy is unresolved and highly debated. This is primarily due to methodological limitations and many assumptions being made on static measures or correlative associations....	It's not just about protein turnover: the role of ribosomal biogenesis and satellite cells in the regulation of skeletal muscle hypertrophy
Macronutrient requirements for hypertrophy	no processo de hipertrofia muscular? / Does the ingestion of animal or vegetable protein generate a difference in the anabolic response in the process of muscle hypertrophy? Introdução: A proteína tem importante papel na hipertrofia, pois auxilia como substrato para síntese muscular e energia para a realização da contração muscular, sendo importantes componentes na base dos alimentos....	A ingestão de proteína animal ou vegetal gera diferença na resposta anabólica no processo de hipertrofia muscular? / Does the ingestion of animal or vegetable protein generate a difference in the anabolic response in the process of muscle hypertrophy?
Macronutrient requirements for hypertrophy	... Powerlifters, on the other hand, routinely train with high-intensity loads and lengthy rest periods between sets. Although both groups are known to display impressive muscularity, it is not clear which method is superior for hypertrophic gains. It has been shown that many factors mediate the hypertrophic process and that mechanical tension, muscle damage, and metabolic stress all can play a role in exercise-induced muscle growth....	The mechanisms of muscle hypertrophy and their application to resistance training.

Recovery and Hypertrophy

Search terms:

- *Importance of sleep and rest days*
- *Role of recovery in muscle hypertrophy*

Search Term	Relevant Excerpt	Citation Source
Importance of sleep and rest days	... There are a number of full bodies stretching exercises that are able to promote height increase. Another very important factor is getting enough sleep. During deep sleep, growth hormone is released into blood stream....	How to Grow Taller? (อยากสูง...ทำอย่างไร)
Importance of sleep and rest days	... However, rest breaks have a greater effect as a countermeasure against poor performance when sleep pressure is higher. These data add to the growing body of evidence showing the importance of sleep for good cognitive functioning in adolescents, and suggest that more frequent rest breaks might be important in situations where sleep loss is unavoidable.	Assessing the benefits of napping and short rest breaks on processing speed in sleep-restricted adolescents
Importance of sleep and rest days	INTRODUCTION Appreciation of the importance of adequate sleep in maintaining health has greatly escalated in recent decades. Both the quality and quantity (short as well as long duration) of sleep have been related to a variety of health outcomes including mortality from all causes as well as numerous specific causes of morbidity and mortality.1–7...	NATIONAL TRENDS IN OUTPATIENT VISITS FOR INSOMNIA, APNEA AND SLEEP MEDICATIONS
Role of recovery in muscle hypertrophy	Satellite cells (SC) play an integral role in the recovery from skeletal muscle damage and supporting muscle hypertrophy. Acute resistance exercise typically elevates type I and type II SC content 24-96 hours post-exercise in healthy young males, although comparable research in females is lacking....	Satellite cell and myonuclear accretion is related to training-induced skeletal muscle fiber hypertrophy in young males and females.

Search Term	Relevant Excerpt	Citation Source
Role of recovery in muscle hypertrophy	... Resistance exercise training (RET)–induced skeletal muscle hypertrophy is a product of external (e.g., RE programming, diet, some supplements) and internal variables (e.g., mechanotransduction, ribosomes, gene expression, satellite cells activity). RE is undeniably the most potent nonpharmacological external variable to stimulate the activation/ suppression of internal variables linked to muscular hypertrophy or countering disuse-induced muscle loss. Here, we posit that despite considerable research on the impact of external variables on RET and hypertrophy, internal variables (i.e., inherent skeletal muscle biology) are dominant in regulating the extent of hypertrophy in response to external stimuli....	An Evidence-Based Narrative Review of Mechanisms of Resistance Exercise–Induced Human Skeletal Muscle Hypertrophy
Role of recovery in muscle hypertrophy	... Recently, increasing evidence has demonstrated that these macrophages could also present two major subsets during tissue healing; proliferative macrophages (M1-like), which are responsible for increasing myogenic cell proliferation, and restorative macrophages (M2-like), which are accountable for the end of the mature muscle myogenesis. The participation and characterization of these macrophage subsets is critical during myogenesis, not only to understand the inflammatory role of macrophages during muscle recovery but also to create supportive strategies that can improve mass muscle maintenance. Indeed, most of our knowledge about macrophage subsets comes from skeletal muscle damage protocols, and we still do not know how these subsets can contribute to skeletal muscle adaptation....	From skeletal muscle damage and regeneration to the hypertrophy induced by exercise: What is the role of different macrophages subsets?

Genetics and Hypertrophy

- Age and Hypertrophy
- Gender and Hypertrophy

Age and Hypertrophy

Search terms:

- *Impact of age on muscle hypertrophy*
- *Muscle growth in older adults*

Search Term	Relevant Excerpt	Citation Source
Impact of age on muscle hypertrophy	... It is generally believed a poor NPB occurs due to reduced muscle protein synthetic responses to exercise, dietary amino acid availability, or an insensitivity of insulin to suppress breakdown. Hence, aging muscles appear to be resistant to the anabolic action of exercise and protein (amino acids or hormonal) when compared to their younger counterparts. The mechanisms that underpin anabolic resistance to anabolic stimuli (protein and resistance exercise) are multifactorial and may be partly driven by poor lifestyle choices (increased sedentary time and reduced dietary protein intake) as well as an inherent dysregulated mechanism in old muscles irrespective of the environmental stimuli....	The Role of the IGF-1 Signaling Cascade in Muscle Protein Synthesis and Anabolic Resistance in Aging Skeletal Muscle
Impact of age on muscle hypertrophy	... Despite a blunted molecular response to an exercise bout, aging muscle cells demonstrated remarkable plasticity, with substantial improvements in myofibril size and strength during RT....	Effects of Resistance Exercise Training on Aged Skeletal Muscle: Potential Role of Muscle Stem Cells
Impact of age on muscle hypertrophy	... The net balances of amino acids across the previously working leg were identical, suggesting that the net accretion of protein was the same whether the meal was given at 1 or 3 h. This obviously is at odds with the results presented by Esmarck et al. (2001). Of course, the major difference may be in the relative sensitivity of the muscle of the elderly subjects to contractile activity and to exogenous amino acids. Work from the Galveston lab has also shown recently that elderly subjects appear to exhibit what might be called 'nutrient resistance' of protein synthesis, in as much as they show a diminished response to exogenous amino acids plus carbohydrate, compared to young subjects (Volpi et al. 2000)....	Grandad, it ain't what you eat, it depends when you eat it - that's how muscles grow!
Muscle growth in older adults	... Skelton et al. 1995; Young, 1997). Nevertheless, it would make sense to find ways of increasing muscle mass in the elderly, not only because muscle strength and functionality would probably be improved more but also because of the attendant metabolic advantages in having a high lean	Grandad, it ain't what you eat, it depends

Search Term	Relevant Excerpt	Citation Source
	to fat weight body ratio, including increases in glucose tolerance and the capacity to oxidize fat. The paper published in this issue of The Journal of Physiology by Esmarck et al. (2001) provides us with some very interesting insights into the nutritional control of muscle mass....	when you eat it - that's how muscles grow!
Muscle growth in older adults	... The evidence presented by Snijders et al. (2019) is particularly interesting when compared with previous studies from their group. Following 24 weeks of RT, Snijders et al. (2017) demonstrated an increase in type II muscle fibre SC (18%) and fibre size (30%) in older adults. Similarly, Verdijk et al. (2016) showed increases in SC content, accompanied by augmented CC, CFPE and increased type II muscle fibre size after 12 weeks of RT in older adults....	Effects of combined exercise training in older adults: a potential relationship between muscle fibre satellite cell function and capillarization
Muscle growth in older adults	A group (n = 8) of healthy older (68 +/- 6 yr) adults participated in a 36-session progressive resistance exercise training program targeting the thigh muscles to determine the relationship between muscle gene expression and gains in muscle size and strength. Biopsies were obtained from the vastus lateralis at baseline 72 h after an acute bout of exercise and 72 h after completion of the training program....	Muscle expression of genes associated with inflammation, growth, and remodeling is strongly correlated in older adults with resistance training outcomes.

Gender and Hypertrophy

Search terms:

- *Gender differences in muscle growth*
- *Muscle hypertrophy in women*

Search Term	Relevant Excerpt	Citation Source
Gender differences in muscle growth	Gender Difference in Skeletal Muscle Histology and Ultrastructure, K. Chorneyko and J. Bourgeois Muscle Sympathetic Nerve Activity During Exercise and Influences of Gender, S. Ettinger...	Gender Differences in Metabolism: Practical and Nutritional Implications
Gender differences in muscle growth	Gender-related differences in maximal leg muscle power were examined in 496 females and 426 males aged 8 to 20 years. Cycling peak power (CPP, including the force required to accelerate the flywheel of the cycle ergometer) was measured during three sprints....	Gender differences in peak muscle performance during growth.
Gender differences in muscle growth	... From these results, it was suggested that gender differences exist in lower limb muscles thickness among healthy young children aged between 3 and 8 years old. It was also suggested that the muscle development of MTa and MTp was different in boys, while lower limb muscle development in girls stayed constant....	Growth and gender differences of lower limb muscle thickness in children aged between 3 and 8 years old
Muscle hypertrophy in women	Resistance training volume enhances muscle hypertrophy, but not strength in postmenopausal women: a randomized controlled trial. J Strength Cond Res 36(5): 1216–1221, 2022—Among several possible resistance training (RT) variables to be manipulated, the training volume has been considered as a critical variable to maximize RT-induced hypertrophy....	Resistance Training Volume Enhances Muscle Hypertrophy, but Not Strength in Postmenopausal Women: A Randomized Controlled Trial
Muscle hypertrophy in women	... Furthermore, the change in myonuclei per fiber was positively correlated with type I and type II fiber hypertrophy (both r = 0.68; P < 0.01). Our results suggest that SC responses to acute and chronic resistance exercise are similar in males and females and that SC and	Satellite cell and myonuclear accretion is related to

Search Term	Relevant Excerpt	Citation Source
	myonuclear accretion is related to training-induced muscle fiber hypertrophy.	training-induced skeletal muscle fiber hypertrophy in young males and females.
Muscle hypertrophy in women	... No changes were detected in serum hormone concentrations, but baseline free testosterone levels in the ECC and CON group combined correlated with changes in 1RM (r = 0.520, p < 0.016) during training. Large neuromuscular adaptations of the upper body occurred in women during ECC, and CON training in 10 weeks. Isometric force increased only in response to ECC, and total muscle sum value increased more during ECC than CON training....	Effects of Upper Body Eccentric versus Concentric Strength Training and Detraining on Maximal Force, Muscle Activation, Hypertrophy and Serum Hormones in Women.