IMPORTANCIA ENTRENAMIENTO DE FUERZA

Escuela de Osteopatía de Madrid
Internacional

IMPORTANCIA ENTRENAMIENTO DE FUERZA:

- HIPERTROFIA.
- INCREMENTO DE RESISTENCIA EN LIGAMIENTOS Y TENDONES.
- DISIPA CALOR Y EVITA TENDINOSIS.
- INCREMENTA SÍNTESIS Y MASA ÓSEA.
- INCREMENTA METABOLISMO BASAL.
- REGULA TENSIÓN ARTERIAL, LÍPIDOS CIRCULANTES, GLUCEMIA.
- INCREMENTA LOS DEPÓSITOS DE ATP, PC, MEJORA METABOLISMO ANAEROBIO Y AERÓBICO PERMITIENDO UNA MEJOR RECUPERACIÓN DE LESIONES.

IMPORTANCIA ENTRENAMIENTO DE FUERZA:

INCREMENTA LOS DEPÓSITOS DE ATP, PC, MEJORA METABOLISMO ANAEROBIO Y AERÓBICO PERMITIENDO UNA MEJOR RECUPERACIÓN DE LESIONES.

HIPERTROFIA

DISIPA CALOR Y EVITA TENDINOSIS

INCREMENTO DE RESISTENCIA EN LIGAMIENTOS Y TENDONES

INCREMENTA SÍNTESIS Y MASA ÓSEA

REGULA TENSIÓN ARTERIAL, LÍPIDOS CIRCULANTES, GLUCEMIA.

INCREMENTA METABOLISMO BASAL

J Strength Cond Res. 2017 Dec;31(12):3508-3523. doi: 10.1519/JSC.0000000000002200.

Strength and Hypertrophy Adaptations Between Low- vs. High-Load Resistance Training: A Systematic Review and Meta-analysis.

Schoenfeld BJ[1], Grgic J[2], Ogborn D[3], Krieger JW[4].

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Abstract

Schoenfeld, BJ, Grgic, J, Ogborn, D, and Krieger, JW. Strength and hypertrophy adaptations between low- vs. high-load resistance training: a systematic review and meta-analysis. J Strength Cond Res 31(12): 3508-3523, 2017-The purpose of this article was to conduct a systematic review of the current body of literature and a meta-analysis to compare changes in strength and hypertrophy between low- vs. high-load resistance training protocols. Searches of PubMed/MEDLINE, Cochrane Library, and Scopus were conducted for studies that met the following criteria: (a) an experimental trial involving both low-load training [≤60% 1 repetition maximum (1RM)] and high-load training (>60% 1RM); (b) with all sets in the training protocols being performed to momentary muscular failure; (c) at least one method of estimating changes in muscle mass or dynamic, isometric, or isokinetic strength was used; (d) the training protocol lasted for a minimum of 6 weeks; (e) the study involved participants with no known medical conditions or injuries impairing training capacity. A total of 21 studies were ultimately included for analysis. Gains in 1RM strength were significantly greater in favor of high- vs. low-load training, whereas no significant differences were found for isometric strength between conditions. Changes in measures of muscle hypertrophy were similar between conditions. The findings indicate that maximal strength benefits are obtained from the use of heavy loads while muscle hypertrophy can be equally achieved across a spectrum of loading ranges.

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J Strength Cond Res. 2016 Aug;30(8):2174-85. doi: 10.1519/JSC.0000000000001308.

Neuromuscular Adaptations After 2 and 4 Weeks of 80% Versus 30% 1 Repetition Maximum Resistance Training to Failure.

Jenkins ND[1], Housh TJ, Buckner SL, Bergstrom HC, Cochrane KC, Hill EC, Smith CM, Schmidt RJ, Johnson GO, Cramer JT.

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Abstract

Jenkins, NDM, Housh, TJ, Buckner, SL, Bergstrom, HC, Cochrane, KC, Hill, EC, Smith, CM, Schmidt, RJ, Johnson, GO, and Cramer, JT. Neuromuscular adaptations after 2 and 4 weeks of 80% versus 30% 1 repetition maximum resistance training to failure. J Strength Cond Res 30(8): 2174-2185, 2016-The purpose of this study was to investigate the hypertrophic, strength, and neuromuscular adaptations to 2 and 4 weeks of resistance training at 80 vs. 30% 1 repetition maximum (1RM) in untrained men. Fifteen untrained men (mean ± SD; age = 21.7 ± 2.4 years; weight = 84.7 ± 23.5 kg) were randomly assigned to either a high-load (n = 7) or low-load (n = 8) resistance training group and completed forearm flexion resistance training to failure 3 times per week for 4 weeks. Forearm flexor muscle thickness (MT) and echo intensity, maximal voluntary isometric (MVIC) and 1RM strength, and the electromyographic, mechanomyographic (MMG), and percent voluntary activation (%VA) responses at 10-100% of MVIC were determined at baseline, 2, and 4 weeks of training. The MT increased from baseline (2.9 ± 0.1 cm) to week 2 (3.0 ± 0.1 cm) and to week 4 (3.1 ± 0.1 cm) for the 80 and 30% 1RM groups. MVIC increased from week 2 (121.5 ± 19.1 Nm) to week 4 (138.6 ± 22.1 Nm) and 1RM increased from baseline (16.7 ± 1.6 kg) to weeks 2 and 4 (19.2 ± 1.9 and 20.5 ± 1.8 kg) in the 80% 1RM group only. The MMG amplitude at 80 and 90% MVIC decreased from baseline to week 4, and %VA increased at 20 and 30% MVIC for both groups. Resistance training to failure at 80 vs. 30% 1RM elicited similar muscle hypertrophy, but only 80% 1RM increased muscle strength. However, these disparate strength adaptations were difficult to explain with neuromuscular adaptations because they were subtle and similar for the 80 and 30% 1RM groups.

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Front Physiol. 2017 May 29;8:331. doi: 10.3389/fphys.2017.00331. eCollection 2017.

Greater Neural Adaptations following High- vs. Low-Load Resistance Training.

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Abstract

We examined the neuromuscular adaptations following 3 and 6 weeks of 80 vs. 30% one repetition maximum (1RM) resistance training to failure in the leg extensors. Twenty-six men (age = 23.1 ± 4.7 years) were randomly assigned to a high- (80% 1RM; *n* = 13) or low-load (30% 1RM; *n* = 13) resistance training group and completed leg extension resistance training to failure 3 times per week for 6 weeks. Testing was completed at baseline, 3, and 6 weeks of training. During each testing session, ultrasound muscle thickness and echo intensity, 1RM strength, maximal voluntary isometric contraction (MVIC) strength, and contractile properties of the quadriceps femoris were measured. Percent voluntary activation (VA) and electromyographic (EMG) amplitude were measured during MVIC, and during randomly ordered isometric step muscle actions at 10-100% of baseline MVIC. There were similar increases in muscle thickness from Baseline to Week 3 and 6 in the 80 and 30% 1RM groups. However, both 1RM and MVIC strength increased from Baseline to Week 3 and 6 to a greater degree in the 80% than 30% 1RM group. VA during MVIC was also greater in the 80 vs. 30% 1RM group at Week 6, and only training at 80% 1RM elicited a significant increase in EMG amplitude during MVIC. The peak twitch torque to MVIC ratio was also significantly reduced in the 80%, but not 30% 1RM group, at Week 3 and 6. Finally, VA and EMG amplitude were reduced during submaximal torque production as a result of training at 80% 1RM, but not 30% 1RM. Despite eliciting similar hypertrophy, 80% 1RM improved muscle strength more than 30% 1RM, and was accompanied by increases in VA and EMG amplitude during maximal force production. Furthermore, training at 80% 1RM resulted in a decreased neural cost to produce the same relative submaximal torques after training, whereas training at 30% 1RM did not. Therefore, our data suggest that high-load training results in greater neural adaptations that may explain the disparate increases in muscle strength despite similar hypertrophy following high- and low-load training programs.

KEYWORDS: morphological adaptations; muscle activation; neural adaptations; training load

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Sports Med. 2018 May;48(5):1117-1149. doi: 10.1007/s40279-017-0835-7.

Effects of Strength Training on the Physiological Determinants of Middle- and Long-Distance Running Performance: A Systematic Review.

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Abstract

BACKGROUND: Middle- and long-distance running performance is constrained by several important aerobic and anaerobic parameters. The efficacy of strength training (ST) for distance runners has received considerable attention in the literature. However, to date, the results of these studies have not been fully synthesized in a review on the topic.

OBJECTIVES: This systematic review aimed to provide a comprehensive critical commentary on the current literature that has examined the effects of ST modalities on the physiological determinants and performance of middle- and long-distance runners, and offer recommendations for best practice.

METHODS: Electronic databases were searched using a variety of key words relating to ST exercise and distance running. This search was supplemented with citation tracking. To be eligible for inclusion, a study was required to meet the following criteria: participants were middle- or long-distance runners with ≥ 6 months experience, a ST intervention (heavy resistance training, explosive resistance training, or plyometric training) lasting ≥ 4 weeks was applied, a running only control group was used, data on one or more physiological variables was reported. Two independent assessors deemed that 24 studies fully met the criteria for inclusion. Methodological rigor was assessed for each study using the PEDro scale.

RESULTS: PEDro scores revealed internal validity of 4, 5, or 6 for the studies reviewed. Running economy (RE) was measured in 20 of the studies and generally showed improvements (2-8%) compared to a control group, although this was not always the case. Time trial (TT) performance (1.5-10 km) and anaerobic speed qualities also tended to improve following ST. Other parameters [maximal oxygen uptake ([Formula: see text]), velocity at [Formula: see text], blood lactate, body composition] were typically unaffected by ST.

CONCLUSION: Whilst there was good evidence that ST improves RE, TT, and sprint performance, this was not a consistent finding across all works that were reviewed. Several important methodological differences and limitations are highlighted, which may explain the discrepancies in findings and should be considered in future investigations in this area. Importantly for the distance runner, measures relating to body composition are not negatively impacted by a ST intervention. The addition of two to three ST sessions per week, which include a variety of ST modalities are likely to provide benefits to the performance of middle- and long-distance runners.

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¿ QUÉ PASA SI LO PERIODIZO O REALIZO INCORRECTAMENTE?

CALENTAR 15-20 MIN EVITA LESIONES TENDINOSAS/ ARTICULARES.

ESTUDIAR SI QUIERES RECORRIDO COMPLETO O INCOMPLETO, ESTIRAMIENTO COMPLETO O INCOMPLETO(EJEMPLOS).

REGULAR LA VELOCIDAD DE EJECUCIÓN DEPENDIENDO DE MOMENTO TEMPORADA Y OBJETIVOS.

RESPETAR LOS PERIODOS DE RECUPERACIÓN BASADOS EN LA EVIDENCIA.

PROTEOLISIS.

- LA MUSCULACIÓN ESTÉTICA IMPLICA UNA HIPERTRÓFIA SARCOPLÁSMICA. 12-15 RM
- LA MUSCULACIÓN DEPORTIVA SARCOMÉRICA.10X10 RM O HASTA 3 REP.
- CUANDO REALIZAMOS EJERCICIOS CON 1 REPETICIÓN LA DEGRADACIÓN TOTAL DE PROTEÍNAS ES PEQUEÑA AUNQUE SE PRODUCE DESTRUCCIÓN LOCAL IMPORTANTE.
- AL REALIZAR 5-10 REP A LATA INTENSIDAD SE DEGRADAN LAS MÁXIMAS PROTEÍNAS PERO EL REISGO LESIVO ES MENOR..
- AL REALIZAR EJERCICIOS CON 15-20-25 REP LA DEGRADACIÓN ES PEQUEÑA LOCAL Y GENERAL.
- ES FUNDAMENTAL REALIZAR ESTÍMULOS SUPRALIMINARES QUE PRODUZCAN MEJORAS ANATÓMICAS Y FUNCIONALES SIN LLEGAR A LA ALTERACIÓN FUNCIONAL.

PLANIFICACIÓN

CUANDO SE ALCANZAN BUENAS BASES DE FUERZA SE PRODUCEN ESTANCAMIENTOS QUE DEBEN SER EVITADOS VARIANDO LA VELOCIDAD DE EJECUCIÓN , EL NÚMERO DE SERIES Y SESIONES, LAS REPETICIONES.

A LA HORA DE PLANIFICAR SERIES Ý RECUPERACIÓN CONSIDERAR QUE LOS INDIVIDUOS ENTRENADOS RECUPERAN EL 90% DE LOS DEPÓSITOS DE CREATINFOSFATO EN 60 SEG , MIENTRAS QUE UN INDIVIDUO NO ENTRENADO TARDA 2 A 5 MINUTOS.

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J Sports Med Phys Fitness. 2016 Mar;56(3):214-22. Epub 2015 Mar 3.

Effects of intra-set rest on the ability to repeat work at maximal isometric strength.

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Abstract

BACKGROUND: The aim of this paper was to analyze how the rest between interval repetitions in intra-set training (at maximal isometric loads) could affect the ability to repeat maximal contractions in subjects with different levels of performance and different experience in strength development work.

METHODS: Twenty subjects were divided randomly into two different groups depending on their sport characteristics: ten subjects were trained in strength development work (Group Strenght--23.1±4.6 years; 172.0±5.3 cm; 79.9±12.1 kg; 2175.6±490.8 N; 46.9±4.9 mL/kg.min), and ten subjects were trained in endurance work (Group Endurance--21.3±4.5 years; 172.4±4.1 cm; 60.0±4.6 kg; 815.5±206.5 N; 67.4±4.9 mL/kg.min). To assess the ability to repeat maximal efforts, 20 repetitions of 5 seconds were performed in a half-squat position, with 1 minute of rest between repetitions.

RESULTS: For both groups, four different phases were observed in the Interval Maximal Force test during the 20-repetition assessment: potentiation, maintenance, moderate loss, and significant loss. For the GE, the loss in maximum strength capacity began in the fourth repetition (GS4th: 3.4%, ns, Effect Size: 0.09 vs. GE3th: 1.6%; ns; ES: 0.06) and reached a statistically significant value in the twelfth repetition (GS12th: 12.7%, P=0.03, ES: 0.35 vs. GE7th: 12.5%; P=0.01; ES: 0.49). The number of repetitions at which the strength began to decrease depended on the subject's sport characteristic and performance level.

CONCLUSIONS: This study shows how an appropriate intra-set rest inclusion can significantly increase the work performed in every set without changing the muscle contraction characteristics, thus delaying muscle fatigue and maintaining the desired training objective.

PMID: 25732318

EQUIPAMIENTOS:

MÁQUINAS ISOTÓNICAS

VENTAJAS: evitas traumas ms-tendinosos, no necesitas destrezas,

aíslan grupos ms, regulas carga.

DESVENTAJAS: No hay trabajo de sinergistas lo que dificulta el trabajo multiaxial y disipación de calor.

TRABAJO CON PESOS LIBRES:

VENTAJAS: Trabajan sinergistas, reeducan gesto deportivo.

DESVENTAJAS: Riesgo aumentado de lesión en sujetos no adaptados y entrenados en el gesto.

TRABAJO CON POLEAS:

Ayuda a mejorar la fase excéntrica del ejercicio la cual ocasiona una dolencia en el músculo que ayuda a que éste se adapte al movimiento realizado evitando futuras lesiones. Es la mejor forma de trabajar la fase excéntrica y el core de forma funcional haciendo entrenamientos específicos. Permite mejorar el trabajo vectorial y multiaxial.

FUNCIONAMIENTO DE LA POLEA CÓNICA: PRINCIPIOS BÁSICOS DE LOS SISTEMAS INERCIALES: DISCO INERCIAL Y POLEA CÓNICA.

El trabajo concéntrico-excéntrico se realiza de forma contínua lo que maximiza los resultados.

EJERCICIOS ISOINERCIALES : CON DISCO INERCIAL.

1.-SQUAT FRONTAL: TODO LO GENERADO EN FASE CONCÉNTRICA TE LO DEVUELVE LA FASE EXCÉNTRICA . ES POSIBLE INCREMENTAR CARGA CON CONTRAPESOS, LATERALIZAR LOS MVTOS Y TRABAJAR MULTIAXIAL. LATERAL-CENTRO-LATERAL-CENTRO.

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TRABAJO CON POLEAS:

TAMBIÉN ES POSIBLE REALIZAR FRENADAS LATERALES DE FORMA A TRABAJAR EN CONCÉNTRICO CON AMBAS PIERNAS , DESPLAZO CARGA ENTONCES Y FRENO CON UNA SOBRECARGÁNDOLA.

PENSEMOS EN UN FUTBOLISTA O UN JUGADOR DE TENIS QUE DEBE FRENAR Y CAMBIAR DE SENTIDO . ES IDEAL PARA PREVENIR ESTAS LESIONES.

ES POSIBLE LATERALIZAR .

ES POSIBLE REALIZAR EJERCICIOS DE TOBILLO ANALÍTICOS.

CON POLEA SE PUEDE REALIZAR CURL DE BÍCEPS PARA ESTABILIZAR EL HÚMERO. TRAPECIO, DORSAL, PESO MUERTO…

LO INTERESANTE ES QUE , CON ESTE TRABAJO , SI APLICAS MUCHA FUERZA , VUELVE MUCHA FUERZA, SI APLICAS MUCHA VELOCIDAD, VUELVE MUCHA VELOCIDAD Y SI REALIZAS LENTO Y SUAVE EL EJERCICIO ASÍ VUELVE.

SI COLOCO LOS CONTRAPESOS EN LA PARTE MÁS EXTERNA AUMENTO LA RESISTENCIA. NO OLVIDAR TENSAR EN LA POSICIÓN FINAL DEL EJERCICIO.

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PeerJ. 2018 Apr 12;6:e4620. doi: 10.7717/peerj.4620. eCollection 2018.

Joint-level energetics differentiate isoinertial from speed-power resistance training-a Bayesian analysis.

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Abstract

BACKGROUND: There is convincing evidence for the benefits of resistance training on vertical jump improvements, but little evidence to guide optimal training prescription. The inability to detect small between modality effects may partially reflect the use of ANOVA statistics. This study represents the results of a sub-study from a larger project investigating the effects of two resistance training methods on load carriage running energetics. Bayesian statistics were used to compare the effectiveness of isoinertial resistance against speed-power training to change countermovement jump (CMJ) and squat jump (SJ) height, and joint energetics.

METHODS: Active adults were randomly allocated to either a six-week isoinertial (*n* = 16; calf raises, leg press, and lunge), or a speed-power training program (*n* = 14; countermovement jumps, hopping, with hip flexor training to target pre-swing running energetics). Primary outcome variables included jump height and joint power. Bayesian mixed modelling and Functional Data Analysis were used, where significance was determined by a non-zero crossing of the 95% Bayesian Credible Interval (CrI).

RESULTS: The gain in CMJ height after isoinertial training was 1.95 cm (95% CrI [0.85-3.04] cm) greater than the gain after speed-power training, but the gain in SJ height was similar between groups. In the CMJ, isoinertial training produced a larger increase in power absorption at the hip by a mean 0.018% (equivalent to 35 W) (95% CrI [0.007-0.03]), knee by 0.014% (equivalent to 27 W) (95% CrI [0.006-0.02]) and foot by 0.011% (equivalent to 21 W) (95% CrI [0.005-0.02]) compared to speed-power training.

DISCUSSION: Short-term isoinertial training improved CMJ height more than speed-power training. The principle adaptive difference between training modalities was at the level of hip, knee and foot power absorption.

ES INTERESANTE EN DEPORTES CON CONTRAMOVIMIENTOS, SU APLICABILIDAD EN GANACIAS DE FZA EN DEPORTES SIN CONTRAMOVIMIENTO ES LIMITADA.

J Strength Cond Res. 2017 Aug;31(8):2324-2337. doi: 10.1519/JSC.0000000000001916.

Can Resistance Training Enhance the Rapid Force Development in Unloaded Dynamic Isoinertial Multi-Joint Movements? A Systematic Review.

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Abstract

Van Hooren, B, Bosch, F, and Meijer, K. Can resistance training enhance the rapid force development in unloaded dynamic isoinertial multi-joint movements? A systematic review. J Strength Cond Res 31(8): 2324-2337, 2017-The objectives of this systematic review were to (a) evaluate whether resistance training can improve the rapid force development in unloaded dynamic isoinertial multi-joint movements and (b) investigate whether these effects differ between untrained/recreationally trained and well-trained individuals. Four electronic databases were screened for studies that measured the effects of resistance training on rapid force development in unloaded dynamic isoinertial multi-joint movements. Twelve studies with a total of 271 participants were included. 10/26 (38%) and 6/14 (43%) of the measures of rapid force development in unloaded dynamic isoinertial multi-joint movements significantly improved following training in the untrained/recreationally trained and well-trained individuals, respectively. Additionally, 7/14 (50%) and 3/12 (25%) of the measures significantly improved during a countermovement and squat jump in the untrained/recreationally trained individuals and 4/6 (67%) and 2/8 (25%) significantly improved during a countermovement and squat jump in the well-trained individuals, respectively. These findings indicate that resistance training has a limited transfer to rapid force development in unloaded dynamic isoinertial multi-joint movements, especially for well-trained individuals and in movements without a countermovement. Furthermore, rapid force development has likely a limited transfer from movements with countermovement to movements without a countermovement and from bilateral movements to unilateral movements. Therefore, it is important to specifically mimic the actual sport movement in order to maximize the transfer of training and testing.

Comment in

Inappropriate Methods and Flawed Conclusion in: Can Resistance Training Enhance the Rapid Force Development in Unloaded Dynamic Isoinertial Multijoint Movements? A Systematic Review. [J Strength Cond Res. 2018]

Authors' Response. [J Strength Cond Res. 2018]

PMID: 28737611 DOI: 10.1519/JSC.0000000000001916

Greater Strength Gains after Training with Accentuated Eccentric than Traditional Isoinertial Loads in Already Strength-Trained Men.

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Abstract

As training experience increases it becomes more challenging to induce further neuromuscular adaptation. Consequently, strength trainers seek alternative training methods in order to further increase strength and muscle mass. One method is to utilize accentuated eccentric loading, which applies a greater external load during the eccentric phase of the lift as compared to the concentric phase. Based upon this practice, the purpose of this study was to determine the effects of 10 weeks of accentuated eccentric loading vs. traditional isoinertial resistance training in strength-trained men. Young (22 ± 3 years, 177 ± 6 cm, 76 ± 10 kg, n = 28) strength-trained men (2.6 ± 2.2 years experience) were allocated to concentric-eccentric resistance training in the form of accentuated eccentric load (eccentric load = concentric load + 40%) or traditional resistance training, while the control group continued their normal unsupervised training program. Both intervention groups performed three sets of 6-RM (session 1) and three sets of 10-RM (session 2) bilateral leg press and unilateral knee extension exercises per week. Maximum force production was measured by unilateral isometric (110° knee angle) and isokinetic (concentric and eccentric 30°.s(-1)) knee extension tests, and work capacity was measured by a knee extension repetition-to-failure test. Muscle mass was assessed using panoramic ultrasonography and dual-energy x-ray absorptiometry. Surface electromyogram amplitude normalized to maximum M-wave and the twitch interpolation technique were used to examine maximal muscle activation. After training, maximum isometric torque increased significantly more in the accentuated eccentric load group than control (18 ± 10 vs. 1 ± 5%, $p < 0.01$), which was accompanied by an increase in voluntary activation (3.5 ± 5%, $p < 0.05$). Isokinetic eccentric torque increased significantly after accentuated eccentric load training only (10 ± 9%, $p < 0.05$), whereas concentric torque increased equally in both the accentuated eccentric load (10 ± 9%, $p < 0.01$) and traditional (9 ± 6%, $p < 0.01$) resistance training groups; however, the increase in the accentuated eccentric load group was significantly greater ($p < 0.05$) than control (1 ± 7%). Knee extension repetition-to-failure improved in the accentuated eccentric load group only (28%, $p < 0.05$). Similar increases in muscle mass occurred in both intervention groups. In summary, accentuated eccentric load training led to greater increases in maximum force production, work capacity and muscle activation, but not muscle hypertrophy, in strength-trained individuals.

Exp Gerontol. 2017 Nov;98:224-229. doi: 10.1016/j.exger.2017.08.034. Epub 2017 Sep 6.

Comparing the effects of two distinct eccentric modalities to traditional resistance training in resistance trained, higher functioning older adults.

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Abstract

BACKGROUND: The effects of eccentric resistance exercise are of interest in the older adult cohort, but to our knowledge, there is no research on the relative effects of different eccentric modalities on a range of outcomes in higher functioning, resistance trained older adults.

METHODS: 33 resistance-trained older adults (aged 67±4.5years) were randomized into one of three supervised training groups: traditional (TRE), eccentric only (ERE) or eccentrically biased resistance exercise (EBRE) on a 45°, plate-loaded leg press machine. Participants trained twice per week with maximal strength, functional capacity, body composition and blood biomarkers measured before and after the eight-week intervention.

RESULTS: Both eccentric and concentric strength, and important functional tasks for independent living significantly improved independent of group. Body composition and blood biomarkers were found to significantly improve in the EBRE group only however, no statistical differences were found between groups.

CONCLUSION: Compared to traditional resistance training, the two eccentric modalities investigated here were equally effective for improvements in maximum muscular strength, functional capacity, body composition and metabolic biomarkers. When training the resistance trained older adult, very heavy isoinertial external loads (at least 70% of one repetition maximum) are effective irrespective of contraction mode. With heavy strength training, resistance trained older adults can continue to expect improvements in health and function.

POLEAS:

- Permiten cambiar dirección de las resistencias y planos, aceleración / deceleración, puedes trabajar las cadenas musculares.

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- GOMAS /THERABANDS:

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ENTRENAMIENTO EN SUSPENSIÓN, KETTLE BELLS, CLUBBELLS, GRAVITY, PLATAFORMAS VIBRATORIAS, ELECTROESTIMULACIÓN

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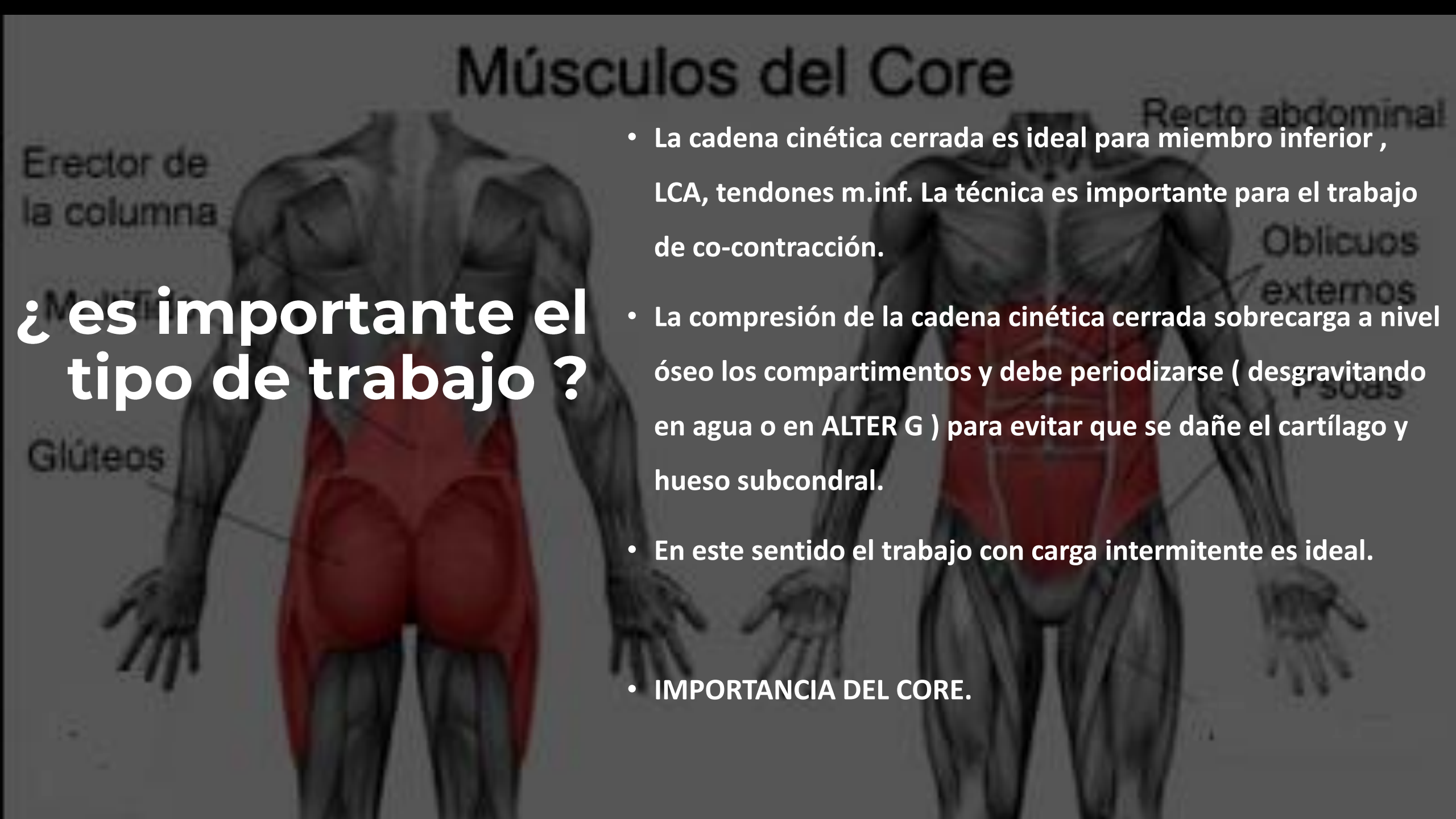
PELOTA SUIZA, PHISIO ROLL,BOSSU,DYNA DISC, TABLAS DE PROPIOCEPCIÓN, ESPUMA DE ESTIRENO... : TRABAJO ESTABILIDAD...

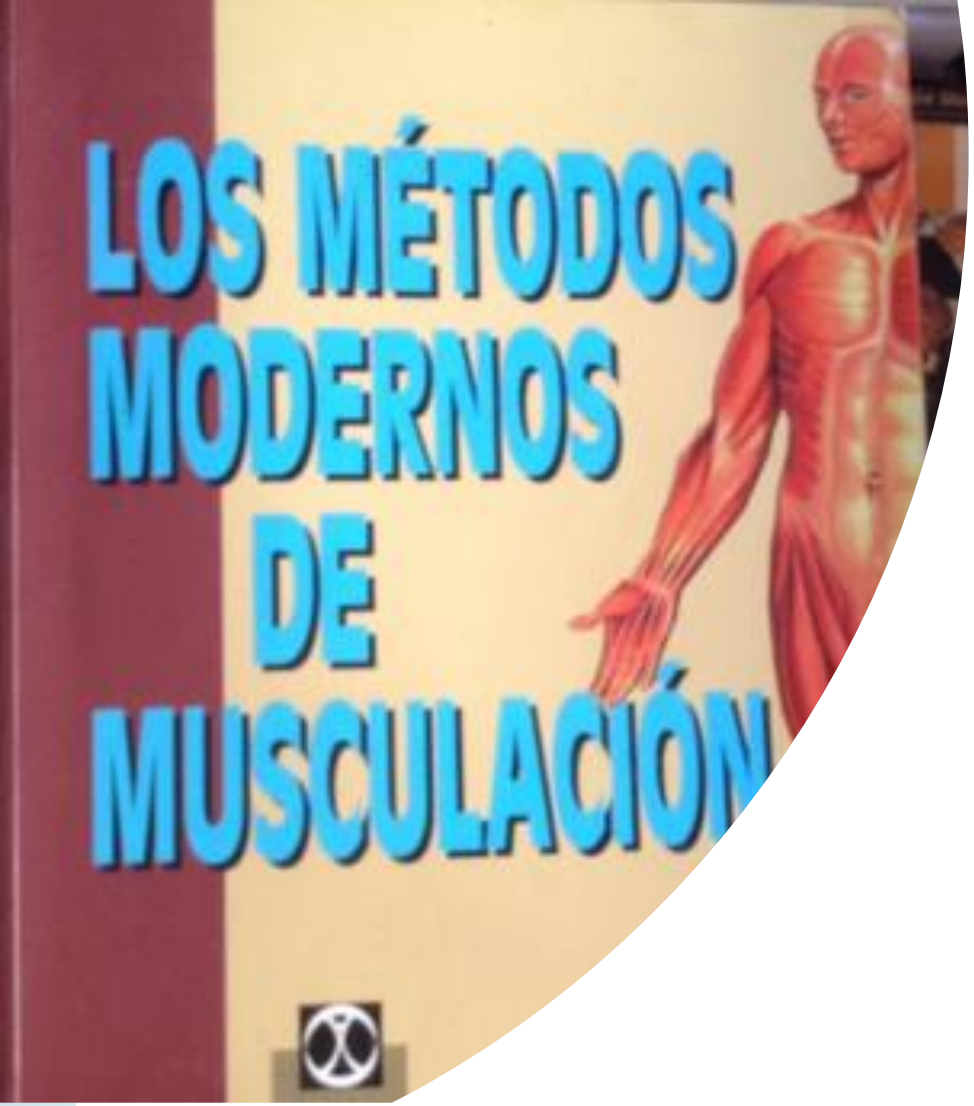
¿ cómo trabajar evitando lesiones?

- Carrera en agua profunda / poco profunda (agua como medio isocinético no mesurable, con gran trabajo de cadenas musculares)
- Trabajo multiaxial en montaña (cuesta arriba para tfl / cintillas) cuesta abajo para Aquiles, cuesta arriba rodilla…
- Readaptación multiaxial .
- Arena (desaferencia / ciega y reestructura equilibrio de forma anárquica).
- Isocinéticos: trabajo uniforma de velocidad angular (Cybex).
- Autocargas.



¿ es importante el tipo de trabajo ?

- La cadena cinética cerrada es ideal para miembro inferior , LCA, tendones m.inf. La técnica es importante para el trabajo de co-contracción.
- La compresión de la cadena cinética cerrada sobrecarga a nivel óseo los compartimentos y debe periodizarse (desgravitando en agua o en ALTER G) para evitar que se dañe el cartílago y hueso subcondral.
- En este sentido el trabajo con carga intermitente es ideal.
- IMPORTANCIA DEL CORE.



COMETÍ G. Los métodos modernos de musculación. Barcelona: Paidotribo, 1998

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Visita nuestro departamento científico

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