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Arm-leg coordination in recreational and competitive breaststroke swimmers

The aims of this study were to assess the durations of the different arm and leg stroke phases (propulsion, glide, and recovery) and the temporal arm-leg gaps between 12 competitive and 12 recreational breaststroke swimmers. The mean ages and best times for a 50-m breaststroke were, respectively, (recreational: 16.9 ± 1.6 y; 49.55 ± 3.38 s; competitive: 16.2 ± 1.5 y; 33.85 ± 1.96 s). Each swimmer was required to swim 2 × 25-m breaststroke at two different paces (slow and sprint) while being videotaped by two underwater cameras (frontal and lateral views). At the same given speed, recreational swimmers used no glide phase which increased the relative contribution of their recovery and propulsive phases. This was mainly caused by the superposition of their leg extension and the second part of their arm recovery, indicating a technique with no glide time between the arm recovery and the leg extension. In terms of phase duration, the recreational swimmers spent more time in arm recovery and in propulsive phases. Furthermore, it was observed that for a comparable increase of swimming speed (recreational: 23.3%, competitive: 22.6%), competitors switched from a glide to an overlapped coordination while recreational swimmers adopted an overlapped technique whatever the swimming speed. As a result, the relative time spent in propulsive phases did not change in the recreational group, but increased by 27.2% in the competitive one. In a swimming developmental program, particular emphasis should be put on arm-leg coordination drills, when considering the breaststroke.

Muscular activation patterns of the bow arm in recurve archery

In archery shooting, the archer should hold the bow in place using only the pressure produced through drawing back the bowstring. Most coaches discourage the archer from gripping the bow as this is believed to produce a sideways deflecting torque on the bow and arrow during the release. The purpose of this study was to compare the bow hand forearm muscular activation patterns of elite archers with beginners to define the muscular contraction-relaxation strategies in the bow hand forearm muscles during archery shooting and investigate the effects of performance level on these strategies. Electromyographic activity of the M. flexor digitorum superficialis and
the M. extensor digitorum of 10 elite and 10 beginner archers were recorded together with a pulse synchronized with the clicker snap. Raw electromyographic records as 1 s before and after the clicker pulse were rectified, integrated, and normalized. The data was then averaged for successive shots of each subject and later for both groups of archers. The main difference between the elite and beginner archers was that the elite archers had a greater activation of the M. extensor digitorum, which indicates that they avoid gripping the bow-handle not only relaxing the flexor muscles, but also contracting the extensor muscle groups. This muscular contraction strategy secures the archer to not interfere with the forward movement of the bow, which is the forward acceleration of the bow caused by the pushing power of the bowstring.

Author Broglio, Steven P.; Monk, Annette; Sopiarz, Kay And Cooper, Earl R.
Title The influence of ankle support on postural control
Abstract Postural control assessments are commonly administered to athletes as part of a pre-season screening. Establishing a baseline level of function permits the clinician to compare post-injury results to normal functioning during the return to play decision-making process. In the athletic setting, follow-up tests may be completed on the sideline immediately following injury. We sought to examine the effect of commonly administered external ankle joint support on postural control using the balance error scoring system (BESS) and the NeuroCom sensory organization test (SOT). Nineteen volunteers free from balance issues completed three sessions with varied ankle support: bilateral prophylactic ankle taping, laced bracing device, or barefoot. Each session included an initial balance assessment on the BESS and SOT, a 20 min treadmill walk, and post-walk balance test. Fewer errors, indicating improved balance, were committed on the BESS during the barefoot condition than the braced ankle condition (p = 0.044) at the pre-walk assessment. During the post-walk assessment, fewer errors were committed during the barefoot condition compared to the braced ankle condition (p = 0.034) and the taped ankle condition (p = 0.037). All ankle support conditions showed similar improvements in balance between the pre and post-walk assessments on the BESS (p < 0.001) and SOT composite balance score (p = 0.009). These findings indicate that ankle support devices may influence postural control on the BESS, but not on the NeuroCom SOT. Clinicians using the BESS as a balance assessment device at multiple time points should be consistent in the application of ankle support devices.

Author ARNOLD, BRENT L.; DE LA MOTTE, SARAH; LINENS, SHELLEY and ROSS, SCOTT E. 1

**Title**: Ankle Instability Is Associated with Balance Impairments: A Meta-Analysis.


**Purpose**: Our primary purpose was to determine whether balance impairments were associated with functional ankle instability (FAI).

**Methods**: Our literature search consisted of four parts: 1) an electronic search of PubMed, CINAHL, pre-CINAHL, and SPORTDiscus; 2) a forward search of articles selected from the electronic search using the Science Citation Index; 3) a hand search of the previously selected articles; and 4) a direct contact with corresponding authors of the previously selected articles. We initially identified 145 articles and narrowed these to 23 for inclusion in the meta-analysis. Identified outcomes were categorized by measurement units and balance task type (i.e., dynamic or static). Each study was coded based on whether inclusion or exclusion criteria were identified. Our statistical analysis included fixed, random, or mixed effect analyses based on the presence of within study heterogeneity and whether categories were being compared. **Results**: FAI was associated with poorer balance (standard difference of the mean [SDM] = 0.455, 95% confidence interval = 0.334-0.577, Z = 7.34, P < 0.001), but no difference existed between dynamic and static measure categories (Q = 3.44, P = 0.063). However, there was a significant difference between the dynamic measures (Q = 6.22, P = 0.013) with both time to stabilization and the Star Excursion Balance Test producing significant SDM and between static measures (Q = 13.00, P = 0.012) with the linear, time, velocity, and other measurement categories (but not area) producing significant SDM. Examination of individual outcomes revealed that time in balance and foot lifts produced very large SDM (3.3 and 4.8, respectively). **Conclusion**: FAI is associated with impaired balance. Due to the relatively large effect sizes and simplicity of use of time in balance and foot lifts, we recommend that further research should establish their clinical validity and clinical cutoff scores.

**Title**: Relationships Between Lower Extremity Alignment and the Quadriceps Angle.


**Objective**: To determine the extent to which select lower extremity alignment characteristics of the pelvis, hip, knee, and foot are related to the Q angle. **Design**: Descriptive cohort study design. **Setting**: Applied Neuromechanics Research Laboratory. **Participants**: Two hundred eighteen participants (102 males, 116 females). **Assessment of Risk Factors**: Eight clinical measures of static alignment of the left lower extremity were measured by a single
examiner to determine the impact of lower extremity alignment on the magnitude of Q angle. **Main Outcome Measures:** Q angle, pelvic angle, hip anteversion, tibiofemoral angle, genu recurvatum, tibial torsion, navicular drop, and femur and tibia length. **Results:** Once all alignment variables were accounted for, greater tibiofemoral angle and femoral anteversion were significant predictors of greater Q angle in both males and females. Pelvic angle, genu recurvatum, tibial torsion, navicular drop, and femur to tibia length ratio were not significant independent predictors of Q angle in males or females. **Conclusions:** Greater femoral anteversion and tibiofemoral angle result in greater Q angle, with changes in tibiofemoral angle having a substantially greater impact on the magnitude of the Q angle compared with femoral anteversion. As such, the Q angle seems to largely represent a frontal plane alignment measure. As many knee injuries seem to result from a combination of both frontal and transverse plane motions and forces, this may in part explain why Q angle has been found to be a poor independent predictor of lower extremity injury risk.
Cardiología

Author: THIJSSEN, DICK H. J.; DAWSON, ELLEN A.; BLACK, MARK A.; HOPMAN, MARIA T. E.; CABLE, Nigel T. and GREEN, DANIEL J.

Title: Brachial artery blood flow responses to different modalities of lower limb exercise. [Miscellaneous Article]


Abstract: Introduction/Purpose: Cycling is associated with a reproducible systolic anterograde and diastolic retrograde flow pattern in the brachial artery (BA) of the inactive upper limb, which results in endothelial nitric oxide (NO) release. The purpose of this study was to examine the impact of different types and intensities of lower limb exercise on the BA flow pattern. Methods: We examined BA blood flow and shear rate patterns during cycling, leg kicking, and walking exercise in 12 young subjects (24 +/- 3 yr). BA diameter, blood flow, and shear rate were assessed at baseline (1 min) and at three incremental intensity levels of cycling (60, 80, and 120 W), bilateral leg kicking (5, 7.5, and 10 kg), and walking (3, 4, and 5 km[h]^{-1}), performed for 3 min each. Edge detection and wall tracking of high-resolution B-mode arterial ultrasound images, combined with synchronized Doppler waveform envelope analysis, were used to calculate conduit artery diameter and anterograde/retrograde blood flow and shear rate continuously across the cardiac cycle. Results: BA mean blood flow and shear rate increased significantly throughout each exercise protocol (P < 0.001), and BA anterograde blood flow and shear rate showed comparable increases throughout each protocol (P < 0.001). Retrograde blood flow and shear rate, however, demonstrated a significant increase during cycling and walking (P < 0.001) but not during leg kicking. Conclusion: Rhythmic lower limb exercise (cycling and walking) results in an increase in BA systolic anterograde blood flow and shear rate, directly followed by a large retrograde flow and shear rate. This typical pattern, previously linked with endothelial NO release, is not present during a different type of exercise such as leg kicking.

Author: Campbell, R M; Berger, S and Drezner, J

Title: Sudden cardiac arrest in children and young athletes: the importance of a detailed personal and family history in the pre-participation evaluation. [Review]


Abstract: Healthcare providers have become more aware of and concerned about paediatric sudden cardiac arrest. The diseases predisposing a patient to sudden cardiac arrest are all infrequently encountered. However, a detailed and comprehensive patient and family history
may reveal warning signs and symptoms that identify a patient at higher risk for sudden cardiac arrest. Since many of these diseases are genetic, extensive family evaluation may uncover a previously undetected cardiac disease process and as well direct the development of a complete family evaluation and treatment plan. Published data document that in many cases preceding warning symptoms and signs are present, but may be misinterpreted or disregarded by medical staff. Attention to the details of patient history, family history and physical exam is critical to the success of any detection strategy, which can and should be widely applied.
Purpose: The purpose of the present study was to compare the age-related patterns of anthropometric characteristics in young wrestlers (8-13 yr) to those of a national representative sample of boys the same age. Methods: Two hundred and fifty-three young wrestlers (X[spacing macron] age +/- SD, 11.1 +/- 1.6 yr; height (HT), 145.5 +/- 11.4 cm; body weight (BW), 40.7 +/- 10.9 kg) volunteered as subjects in the present study. The sample of young wrestlers was divided into six independent age groups: age group 8 (AG8), 8.00-8.99 yr (n = 27); AG9, 9.00-9.99 yr (n = 43); AG10, 10.00-10.99 yr (n = 50); AG11, 11.00-11.99 yr (n = 45); AG12, 12.00-12.99 yr (n = 56); and AG13, 13.00-13.99 yr (n = 32). Nine variables including BW, HT, body mass index (BMI), subscapular and triceps skinfolds, waist, midarm, maximal calf, and midthigh circumferences were assessed on each subject. Results: The results showed that there was only one (midthigh circumference) difference between the young wrestlers and the national sample for yearly changes in the anthropometric dimensions. Discussion: These findings indicated that participation in age group wrestling was not associated with age-related patterns of anthropometric characteristics that were different from those of a national representative sample of boys the same age.
literature indicates physical and athletic performance is seasonal; it peaks when 25-hydroxy-vitamin D [25(OH)D] levels peak, declines as they decline, and reaches its nadir when 25(OH)D levels are at their lowest. Vitamin D also increases the size and number of Type II (fast twitch) muscle fibers. Most cross-sectional studies show that 25(OH)D levels are directly associated with musculoskeletal performance in older individuals. Most randomized controlled trials, again mostly in older individuals, show that vitamin D improves physical performance. **Conclusions:** Vitamin D may improve athletic performance in vitamin D-deficient athletes. Peak athletic performance may occur when 25(OH)D levels approach those obtained by natural, full-body, summer sun exposure, which is at least 50 ng[middle dot]mL-1. Such 25(OH)D levels may also protect the athlete from several acute and chronic medical conditions.

**Title**

Effects of Amino Acids Supplement on Physiological Adaptations to Resistance Training.[Miscellaneous Article]

**Source**


**Introduction:** Previous research has demonstrated that ingestion of essential amino acids and their metabolites induce anabolic effects with the potential to augment gains in lean body mass and strength after resistance exercise training. **Purpose:** The purpose of the present study was to examine the effects of an essential amino acid-based formula (Muscle Armor(TM) (MA); Abbott Laboratories, Abbott Park, IL) containing [beta]-hydroxy-[beta]-methylbutyrate (HMB) on hormonal and muscle damage markers in response to 12 wk of resistance exercise. **Methods:** Seventeen healthy men (mean body mass: 77.9 +/- 7.2 kg; mean height: 174.3 +/- 12.4 cm; mean age: 22.9 +/- 3.8 yr) were matched and randomized into two groups and performed 12 wk of periodized heavy resistance training while supplementing with either MA or an isocaloric, isonitrogenous placebo (CON). Every 2 wk during the 12-wk intervention, resting blood draws were obtained, and muscle strength and power were measured. In addition, blood draws were obtained before, during, and after a standardized resistance exercise challenge performed pre-, mid-, and posttraining. **Results:** Lean body mass, muscle strength, and muscle power significantly (P <= 0.05) increased in both groups after training; however, MA supplementation augmented these responses to a significantly greater extent when compared with the CON group. MA supplementation promoted increases in resting and exercise-induced testosterone and resting growth hormone concentrations. In addition,
MA reduced preexercise cortisol concentrations. Throughout the training protocol, MA attenuated circulating creatine kinase and malondialdehyde compared with the CON group, suggesting that MA might have influenced a reduction in muscle damage. **Conclusion:**
MA supplementation beneficially affected training-induced changes in lean body mass, muscle strength, and power, as well as hormonal responses and markers of muscle damage in response to 12 wk of resistance exercise training when compared with an isonitrogenous control.

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**Author** Dunn, Matthew; Mazanov, Jason and Sitharthan, Gomathi

**Title** Predicting future anabolic-androgenic steroid use intentions with current substance use: findings from an internet-based survey.[Article]

**Source** Clinical Journal of Sport Medicine. 19(3):222-227, May 2009

**Objective:** To explore how current substance use, including the use of sports supplements and illicit drugs, may impact upon a person’s future intentions to use anabolic-androgenic steroids (AAS). **Design:** Web-based survey. **Participants:** Two hundred fourteen exercising males (mean age, 30 years; range, 17-61 years) recruited from 5 gymnasiums in Sydney, Australia, completed a web-based survey. The survey contained questions relating to sport supplement use, illicit substance use, reasons for currently not using AAS, and reasons for intending to use AAS in the future. **Interventions:** Participants completed a structured interview schedule that included questions regarding licit and illicit substance use, reasons for non-AAS use, and, where appropriate, reasons for intended future AAS use. **Main Outcome Measures:** The planned main outcome measure was positive intention to use AAS. **Results:** Sixteen percent of the sample indicated that they would use AAS in the future. Reasons for future AAS use included increasing muscle size (80%), improving appearance (74%), and increasing strength (57%). Four-fifths (80%) of the sample reported use of sports supplements, with vitamins and protein supplements commonly reported (83% and 67%, respectively); more than one-third (36%) reported use of creatine in the past 6 months. Half (52%) of the sample reported use of illicit substances in the preceding 6 months, with amphetamines and cannabis commonly reported (66% and 62%, respectively). Significant predictors of intending to use AAS included past 6-month use of creatine and knowing AAS users. **Conclusions:** The use of sport supplements and/or illicit substances may remove barriers for the future use of such drugs as AAS. Future research is necessary to explore in depth whether such substances may act as a "gateway" to future AAS use.
Fisiología

**Author**  M. Buchheit, P.M. Lepretre, A.L. Behaegel, G.P. Millet, G. Cuvelier and S. Ahmaidi

**Title**  Cardiorespiratory responses during running and sport-specific exercises in handball players


To determine whether a 4-a-side handball (HB) game is an appropriate aerobic stimulus to reach and potentially enhance maximal oxygen uptake ($\hat{V}O_{2\text{max}}$), and whether heart rate (HR) is a valid index of $\hat{V}O_2$ during a handball game. Nine skilled players (21.0 ± 2.9 yr) underwent a graded maximal aerobic test (GT) where $\hat{V}O_{2\text{max}}$ and HR – $\hat{V}O_2$ relationship were determined. $\hat{V}O_2$, HR and blood lactate ([La]$_b$) were recorded during a 2 × 225 s (interspersed with 30 s rest) 4-a-side handball game and were compared to those measured during an 480-s running intermittent exercise (IE). Mean $\hat{V}O_2$ tended to be higher in handball compared to IE (93.9 ± 8.5 vs. 87.6 ± 7.4% $O_2\text{max}$, $p = 0.06$), whereas HR was similar (92.3 ± 4.9 vs. 93.9 ± 3.9% of the peak of HR, $p = 0.10$). [La]$_b$ was lower for handball than for IE (8.9 ± 3.5 vs. 11.6 ± 2.1 mmol l$^{-1}$, $p = 0.04$). Time spent over 90% of $\hat{V}O_2$ was higher for handball than for IE (336.1 ± 139.6 s vs. 216.1 ± 124.7 s; $p = 0.03$). The HR – $\hat{V}O_2$ relationship during GT was high ($r^2 = 0.96$, $p < 0.001$) but estimated $\hat{V}O_2$ from HR was lower to that measured ($p = 0.03$) in handball, whereas there was no difference in IE. 4-a-side handball game can be used as a specific alternative to IE for enhancing aerobic fitness in handball players. Nevertheless, the accuracy of HR measures for estimating $\hat{V}O_2$ during handball is poor.

**Author**  R J Shephard

**Title**  Maximal oxygen intake and independence in old age


This brief review examines the likelihood that a deterioration of aerobic fitness will lead to a loss of independence in old age. The rate of deterioration of maximal aerobic power observed in middle-aged adults continues unabated during the retirement years. Loss of independence seems likely if maximal oxygen intake falls below a threshold of 18 ml/kg/min in men and 15 ml/kg/min in women, reached at 80–85 years. A regular programme of aerobic exercise can slow or reverse the functional deterioration, reducing the individual’s biological age by 10 or more years, and potentially prolonging independence by a similar amount. There remains a need to clarify the importance of decreasing aerobic fitness relative to other potential causes of dependency but, from the practical viewpoint, regular
aerobic activity should be commended to elderly people since it can address many of the issues of both functional loss and chronic disease.

**Author**
KOSTEK, MATTHEW A.; ANGELOPOULOS, THEODORE J.; CLARKSON, PRISCILLA M.; GORDON, PAUL M.; MOYNA, NIALL M.; VISICH, PAUL S.; ZOELLER, ROBERT F.; PRICE, THOMAS B.; SEIP, RICHARD L.; THOMPSON, PAUL D.; DEVANEY, JOSEPH M.; GORDISH-DRESSMAN, HEATHER; HOFFMAN, ERIC P. and PESCATELLO, LINDA S.

**Title**
Myostatin and Follistatin Polymorphisms Interact with Muscle Phenotypes and Ethnicity

**Source**

**Purpose:** We examined associations among myostatin (MSTN) 2379 A > G and 163 G > A and follistatin (FST) -5003 A > T and -833 G > T single nucleotide polymorphisms (SNP) on the muscle size and the strength response to resistance training (RT). Methods: Subjects (n = 645, age = 24.1 +/- 0.2 yr, body mass index [BMI] = 24.2 +/- 0.2 kg[middle dot]m-2) self-disclosed themselves as Caucasian (78.9%), African American (3.6%), Asian (8.4%), Hispanic (5.0%), or Other (4.2%). They were genotyped for MSTN 2379 A > G (n = 645), MSTN 163 G > A (n = 639), FST -5003 A > T (n = 580), and FST -833 G > T (n = 603). We assessed dynamic (one repetition maximum [1RM]) and isometric (maximum voluntary contraction [MVC]) muscle strength and size (cross-sectional area [CSA]) of the elbow flexors before and after 12 wk of unilateral upper-arm RT. Repeated-measures ANCOVA tested associations among genetic variants and muscle phenotypes with age and BMI as covariates. Results: Baseline MVC was greater among African Americans who were carriers of the MSTN G2379 allele (AG/GG, n = 15) than the A2379A homozygotes (n = 8; 64.2 +/- 6.8 vs 49.8 +/- 8.7 kg). African Americans who were carriers of the FST T-5003 allele (n = 12) had greater baseline 1RM (11.9 +/- 0.7 vs 8.8 +/- 0.5 kg) and CSA (24.4 +/- 1.3 vs 19.1 +/- 1.2 cm2) than African Americans with the A-5003A genotype (n = 14; P < 0.05). No MSTN or FST genotype and muscle phenotype associations were found among the other ethnic groups (P >= 0.05). Conclusion: MSTN 2379 A > G and FST -5003 A > T were associated with baseline muscle strength and size among African Americans only. These ethnic-specific associations are hypothesis generating and should be confirmed in a larger sample of African Americans. (C)2009The American College of Sports Medicine

**Author**
HOFMIJSTER, MATHIJS J.; VAN SOEST, ARTHUR J and DE KONING, JOS J.

**Title**
Gross Efficiency during Rowing Is Not Affected by Stroke
Rate. [Miscellaneous Article]


Purpose: It has been suggested that the optimal stroke rate in rowing is partly determined by the stroke-rate dependence of internal power losses. This should be reflected in a stroke-rate dependency of gross efficiency (egross). The purpose of this study was to investigate if egross is affected by stroke rate. A second aim was to determine whether internal power losses can be estimated by the negative power output during the stroke cycle (Pnegative). Methods: Seventeen well-trained female rowers participated in this study. They rowed three trials on a modified rowing ergometer on slides at a submaximal intensity, with a respiratory exchange ratio of 1 or close to 1. Stroke rates were 28, 34, and 40 strokes per minute. The trials were fully randomized. Power transfer to the flywheel was kept constant whereas egross was determined during each trial. Results: No significant differences in egross were found between conditions. This finding suggests that in rowing internal power losses are not influenced by stroke rate. Furthermore, although Pnegative increased at increasing stroke rate (P < 0.001), no relationship was found with egross. This suggests that Pnegative is not a reliable measure to estimate internal power losses. Conclusion: This study shows that within the range of stroke rates applied in competitive rowing, internal power losses are unrelated to rowing cycle frequency.

Author  SANTALLA, ALFREDO, NARANJO, JOSE and TERRADOS, NICOLAS

Title  Muscle Efficiency Improves over Time in World-Class Cyclists. [Miscellaneous Article]


Purpose: To determine the change in muscular efficiency in world-class professional cyclists during years of training/competition. Methods: Twelve male world-class professional road cyclists (mean +/- SD: age = 22.6 +/- 3.8 yr and V[O2max] = 75.5 +/- 3.3 mL[kg^-1][min^-1]) performed an incremental test (starting at 100 W with workload increases of 50 W every 4-min interval until volitional exhaustion) before and after a five-season period. Delta efficiency (DE) was calculated from 100 W to that power output (PO) in which the RER was 1. Results: DE increased (P < 0.01) from 23.61 +/- 2.78% to 26.97 +/- 3.7% from the first to the fifth year, whereas V[O2max] showed no significant increase. A significant inverse correlation (r = -0.620; P = 0.032) between DE and V[O2max] was found in the fifth year, whereas no significant correlation between these variables was found in the first year. A significant inverse correlation (r = -0.63; P = 0.029) was found
between the increase percentage in DE ([DELTA]DE) and VO2max (mL[middle dot]kg-1[middle dot]min-1) in the fifth year, whereas no significant correlation was found between these variables in the first year. Conclusion: The results show an increase in DE in world-class professional cyclists during a five-season training/competition period, without significant variations in VO2max. The results also suggest that the increase in DE could be a possible way for performance compensation, especially in those subjects with lower VO2max.

Author
KIRK, ERIK P.; DONNELLY, JOSEPH E.; SMITH, BRYAN K.; HONAS, JEFF; LeCHEMINANT, JAMES D.; BAILEY, BRUCE W.; JACOBSEN, DENNIS J.; WASHBURN, RICHARD A.

Title
Minimal resistance training improves daily energy expenditure and fat oxidation.[Miscellaneous Article]

Source

Abstract
Long-term resistance training (RT) may result in a chronic increase in 24-h energy expenditure (EE) and fat oxidation to a level sufficient to assist in maintaining energy balance and preventing weight gain. However, the impact of a minimal RT program on these parameters in an overweight college-aged population, a group at high risk for developing obesity, is unknown. Purpose: We aimed to evaluate the effect of 6 months of supervised minimal RT in previously sedentary, overweight (mean +/- SEM, BMI = 27.7 +/- 0.5 kg[middle dot]m-2) young adults (21.0 +/- 0.5 yr) on 24-h EE, resting metabolic rate (RMR), sleep metabolic rate (SMR), and substrate oxidation using whole-room indirect calorimetry 72 h after the last RT session. Methods: Participants were randomized to RT (one set, 3 d[middle dot]wk-1, three to six repetition maximums, nine exercises; N = 22) or control (C, N = 17) groups and completed all assessments at baseline and at 6 months. Results: There was a significant (P < 0.05) increase in 24-h EE in the RT (527 +/- 220 kJ[d-1]) and C (270 +/- 168 kJ[d-1]) groups; however, the difference between groups was not significant (P = 0.30). Twenty-four hours of fat oxidation (g[d-1]) was not altered after RT; however, reductions in RT assessed during both rest (P < 0.05) and sleep (P < 0.05) suggested increased fat oxidation in RT compared with C during these periods. SMR (8.4 +/- 8.6%) and RMR (7.4 +/- 8.7%) increased significantly in RT (P < 0.001) but not in C, resulting in significant (P < 0.001) between-group differences for SMR with a trend for significant (P = 0.07) between-group differences for RMR. Conclusion: A minimal RT program that required little time to complete (11min per session) resulted in a chronic increase in energy expenditure. This adaptation in energy expenditure may have a favorable impact on energy balance and fat oxidation sufficient to assist with the prevention of obesity in sedentary, overweight young adults, a group
at high risk for developing obesity.

**Title**
Time course of changes in endurance capacity: a 1-yr training study.

**Abstract**
Purpose: To investigate the magnitude and the time course of changes in endurance capacity during the first year of an aerobic endurance training program with constant HR prescription. Methods: Eighteen previously untrained subjects (7 males and 11 females, 42 +/- 5 yr, BMI of 24.3 +/- 2.5 kg[middle dot]m-2, and maximal oxygen uptake (V[spacing dot above]O2max) of 37.7 +/- 4.6 mL[middle dot]min-1[middle dot]kg-1) completed a 12-month jogging/walking program on 3 d[middle dot]wk-1 45 min per session with a constant HR prescription of 60% HR reserve. Exhaustive treadmill tests were conducted before the intervention and after 3, 6, 9, and 12 months of training. In addition, submaximal tests on an indoor running track were performed every 4 wk. Results: After 12 months, V[spacing dot above]O2max had increased by 0.36 +/- 0.33 L[middle dot]min-1 (median [interquartile range]: 16% [9%-20%], P < 0.001). After 3, 6, and 9 months, 52%, 65%, and 79% of this increase were reached, respectively. Resting HR decreased by a total of 9 +/- 6 min-1 (P<0.001). Of this change, 47% and 102% had occurred after 3 and 6 months, respectively. Submaximal exercise HR during the treadmill tests decreased by 11 +/- 7 min-1 (P < 0.001) on average. After 3 and 6 months of training, 93% and 101% of this change were observed, respectively. The running track tests revealed that submaximal exercise HR did not change significantly after the ninth week of training.

**Title**
Training Surface and Intensity: Inflammation, Hemolysis, and Hepcidin Expression.

**Abstract**
Purpose: This investigation assessed the effects of training intensity and ground surface type on hemolysis, inflammation, and hepcidin activity during running. Methods: Ten highly trained male endurance athletes completed a graded exercise test, two continuous 10-km runs on a grass (GRASS) and a bitumen road surface (ROAD) at 75%-80%
peak $V^{\text{O}2}$ running velocity, and a 10 x 1-km interval running session (INT) at 90%-95% of the peak $V^{\text{O}2}$ running velocity. Venous blood and urine samples were collected before, immediately after, and at 3 and 24 h after exercise. Serum samples were analyzed for circulating levels of IL-6, free hemoglobin (Hb), haptoglobin (Hp), iron, and ferritin. Urine samples were analyzed for changes in hepcidin expression. **Results:** After running, the IL-6 and free Hb were significantly greater, and serum Hp was significantly lower than preexercise values in all three conditions ($P < 0.05$). Furthermore, IL-6 levels and the change in free Hb from baseline were significantly greater in the INT compared with those in the GRASS ($P < 0.05$). There were no differences between the GRASS and ROAD training surfaces ($P > 0.05$). Serum iron and ferritin were significantly increased after exercise in all three conditions ($P < 0.05$) but were not different between trials. **Conclusion:** Greater running intensities incur more inflammation and hemolysis, but these variables were not affected by the surface type trained upon.

**Author**
Lairez, Olivier; Cournot, Maxime; Minville, Vincent; Roncalli, Jerome; Austruy, Julien; Elbaz, Meyer; Galinier, Michel and Carrie, Didier

**Title**
Risk of Neurological Decompression Sickness in the Diver With a Right-to-Left Shunt: Literature Review and Meta-Analysis

**Source**

**Objective:** Literature review and meta-analysis to review the evidence of relationship between the presence of right-to-left shunts (RLSs) and the occurrence of neurological decompression sickness (DCS) in divers. **Data Sources:** MEDLINE, Google Scholar, and Health Technology Assessment databases. **Study Selection:** Five case-control studies in which the prevalence of a RLS in a group of divers with neurological DCS was compared with that of a group of divers with no history of DCS, 3 cross-transversal studies in which the prevalence of RLS was measured in divers with neurological DCS, and 4 cross-transversal studies in which the prevalence of RLS was measured in divers with no history of DCS were reviewed. **Abstract Data Extraction:** Only case-control studies were retained for meta-analysis. **Data Synthesis:** This meta-analysis gathers 5 studies and 654 divers. The combined odds ratio of neurological DCS in divers with RLS was 4.23 (3.05-5.87). The meta-analysis including only large RLS found a combined odds ratio of 6.49 (4.34-9.71). **Conclusions:** Because of a low incidence of neurological DCS, increase in absolute risk of neurological DCS due to RLS is probably small. Thus, in recreational diving, the systematic screening of RLS seems unnecessary. In professional divers, because of a chronic exposition and unknown consequences of cerebral asymptomatic lesions, these results raise again the benefit of the transcranial Doppler in the screening and quantification of the RLS, independently
of their location.
**Title**: Evaluation of RugbySmart: A rugby union community injury prevention programme  
**Abstract**: RugbySmart, a rugby union injury prevention programme, was launched in New Zealand in 2001. It was compulsory for all coaches and referees to complete RugbySmart requirements annually in order to continue coaching or refereeing. After 5 years of implementation the programme partners, Accident Compensation Corporation and New Zealand Rugby Union, evaluated RugbySmart to determine its effectiveness in reducing injuries. The purpose was to evaluate the effect of RugbySmart on reducing injury rates per 100,000 players and resulting injury prevention behaviours. The RugbySmart programme was associated with a decrease in injury claims per 100,000 players in most areas the programme targeted; the programme had negligible impact on non-targeted injury sites. The decrease in injury claims numbers was supported by results from the player behaviour surveys pre- and post-RugbySmart. There was an increase in safe behaviour in the contact situations of tackle, scrum and ruck technique.

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**Title**: The effect of training status on inter-limb joint stiffness regulation during repeated maximal sprints  
**Abstract**: The purpose of this study was to examine the effect of anaerobic fatigue and training status on the joint stiffness (JS) regulation of the lower limbs. Twenty-two subjects participated in this study, with a group of athletes (ATH: n = 11, age: 22.1 ± 9.9 yrs, ht: 181.9 ± 6.3 cm, mass: 88.2 ± 12.7 kg) compared to a group of non-athletes (NON: n = 11, age: 20.9 ± 2.3 yrs, ht: 177.8 ± 7.1 cm, mass: 80.9 ± 22.0 kg). A modified phosphate decrement test, which consisted of eight 35 m timed sprints separated by a 30 s active recovery, allowed for inducement of anaerobic fatigue while incorporating measures of sprinting performance and JS. Assessment of JS consisted of a single-legged 2.2 Hz spring-mass hopping protocol, measured for each limb. This test was performed prior to the warm-up and after sprints two, four and six. Data analysis consisted of repeated measures MANOVA comparing groups, limbs and test. Repeated measures ANOVAs were also performed on the sprint times and the magnitude of inter-limb JS difference. For all data analysis the alpha level was set at p < 0.05. Assessment of between limb JS revealed that the ATH group possessed significantly lower inter-limb variation.
in comparison with the NON group after completion of the first pair of sprints, potentially due to their training status offsetting some of the mechanical and neuromuscular effects of repeated stretch-shortening cycle (SSC) fatigue. This enhanced ability to regulate inter-limb JS, in addition to enhancing performance, may reduce the risk of injury by preserving mechanical efficiency and therefore reducing metabolic cost during SSC contractions.

Author
Alessandra Di Cagno, Carlo Baldari, Claudia Battaglia, Maria Dolores Monteiro, Alessandra Pappalardo, Marina Piazza and Laura Guidetti

Title
Factors influencing performance of competitive and amateur rhythmic gymnastics: Gender differences

Source

Abstract
During last decade, male athletes were involved in official rhythmic gymnastics (RG) competitions. Aim of this study was to examine anthropometric characteristics and motor skills of male rhythmic gymnasts to identify guidelines in talent identification, selection and development training plans. Twenty-four gymnasts (age range 22 ± 4 years), 12 male athletes and 12 female athletes, underwent two testing sessions: the previous session to assess anthropometric measures, and the second one to evaluate jumping ability using Optojump. Three vertical jumps: squat jump (SJ), counter-movement jump (CMJ), hopping test (HT) and three different technical jumps (Split Leap with stretched legs (SL); Cossack with 180° of rotation (CK); Jeté with turn (JWT)) were evaluated. Male gymnasts had significant higher values in each anthropometric measure than females (p < 0.01) except for sitting height/stature ratio, sitting height and fat mass (no significant differences). Female athletes were selected for their lowest fat mass. Height and ground contact time of technical leaps, squat jump and counter-movement jump, were significantly higher in male athletes than females. Height of hopping test (evaluating stiffness), and of difference between CMJ and squat jump (evaluating elastic properties of muscles) were no different between genders. Ground contact time of hopping test was significantly correlated (p < 0.05) with ground contact time of technical leaps. Results of the present study suggest that similar anthropometric characteristics have to be researched for both gymnasts' gender. Reactivity and elastic muscle properties of the legs have to be research both in male and female athletes.
Introduction: The specific effects of resistance and endurance training on upper extremity work capacity, muscular strength, and anaerobic power in chronic survivors of paraplegia have not been previously determined. **Purpose:** This study compared the effects of 12 wk of endurance training (ET) with 12 wk of resistance training (RT) on V\[\text{O}_2\text{peak}, upper extremity strength, and power output in persons with chronic paraplegia. **Methods:** Eighteen subjects with neurologically complete paraplegia, T6-T10, participated in three weekly exercise sessions during a 12-wk training period. Subjects were matched into pairs (body mass and gender) and were randomly assigned to ET or RT. The ET group performed 30 min of arm cranking at 70%-85% of HRpeak. The RT group performed three sets of 10 repetitions at six exercise stations with an intensity of ranging from 60% to 70% of 1 repetition maximum (1RM). Values of upper extremity strength (1RM) were established using the Mayhew regression equation. V\[\text{O}_2\text{peak} was determined during arm ergometry testing using open circuit spirometry. Arm Wingate anaerobic testing (WAnT) was used to determine subjects' peak and mean anaerobic power output. **Results:** V\[\text{O}_2\text{peak} values were significantly greater after RT (15.1%) and ET (11.8%). Muscular strength significantly increased for all exercise maneuvers in the RT group (P values < 0.01) with no changes detected in the ET group. Mean WAnT power increased in the RT and ET groups by 8% and 5%, respectively. The RT group displayed significantly greater gains in peak WAnT power (P < 0.001) than ET, 15.6% and 2.6%, respectively. **Conclusion:** Persons with paraplegia can significantly improve their upper extremity work capacity, muscular strength, and power by participating in RT.

Author KATZMARZYK, PETER T.; CHURCH, TIMOTHY; CRAIG, CORA L.
Sitting Time and Mortality from All Causes, Cardiovascular Disease, and Cancer. [Miscellaneous Article]

Purpose: Although moderate-to-vigorous physical activity is related to premature mortality, the relationship between sedentary behaviors and mortality has not been fully explored and may represent a different paradigm than that associated with lack of exercise. We prospectively examined sitting time and mortality in a representative sample of 17,013 Canadians 18-90 yr of age. Methods: Evaluation of daily sitting time (almost none of the time, one fourth of the time, half of the time, three fourths of the time, almost all of the time), leisure time physical activity, smoking status, and alcohol consumption was conducted at baseline. Participants were followed prospectively for an average of 12.0 yr for the ascertainment of mortality status. Results: There were 1832 deaths (759 of cardiovascular disease (CVD) and 547 of cancer) during 204,732 person-yr of follow-up. After adjustment for potential confounders, there was a progressively higher risk of mortality across higher levels of sitting time from all causes (hazard ratios (HR): 1.00, 1.00, 1.11, 1.36, 1.54; P for trend <0.0001) and CVD (HR: 1.00, 1.01, 1.22, 1.47, 1.54; P for trend <0.0001) but not cancer. Similar results were obtained when stratified by sex, age, smoking status, and body mass index. Age-adjusted all-cause mortality rates per 10,000 person-yr of follow-up were 87, 86, 105, 130, and 161 (P for trend <0.0001) in physically inactive participants and 75, 69, 76, 98, 105 (P for trend = 0.008) in active participants across sitting time categories. Conclusions: These data demonstrate a dose-response association between sitting time and mortality from all causes and CVD, independent of leisure time physical activity. In addition to the promotion of moderate-to-vigorous physical activity and a healthy weight, physicians should discourage sitting for extended periods.

Author LITTMAN, ALYSON J.; FORSBERG, CHRISTOPHER W. and KOEPSELL, THOMAS D.

Physical Activity in a National Sample of Veterans. [Miscellaneous Article]

Purpose: To describe and compare the prevalence of physical activity (PA) in relation to veteran status and use of Department of Veterans Affairs (VA) facilities. Methods: Data were obtained from the 2003 Behavioral Risk Factor Surveillance System surveys of US adults. Veteran status, VA health care use, and PA were determined in 245,564 adults. Individuals were classified as inactive, insufficiently active, or meeting recommendations for moderate or strenuous PA.
To adjust for confounding, we used model-based direct adjustment and chi-square tests corrected for the survey design. **Results:** After adjusting for age and gender, the prevalence of inactivity was significantly lower (16.2% vs 20.5%), and meeting PA recommendations was significantly greater (46.0% vs 42.0%) in veterans than in nonveterans (P < 0.0001). Compared with veterans who did not obtain their health care from the VA, VA users were more likely to be inactive (20.8% vs 14.7%) and less likely to be insufficiently active (34.1% vs 38.2%) or meet recommendations (45.1% vs 47.1%; P < 0.0001). Differences in PA levels between veterans and nonveterans and between VA users and nonusers did not change substantially after additional adjustment for education, race/ethnicity, and smoking. **Conclusion:** Despite the high level of PA required of active duty military personnel, only a minority of veterans met PA recommendations, and the prevalence of inactivity was particularly high in VA users. These findings suggest a large potential to increase PA and improve health in VA users.

**Author**
FJELDSOE, BRIANNA S.; MARSHALL, ALISON L. and MILLER, YVETTE D.

**Title**
Measurement Properties of the Australian Women's Activity Survey.[Miscellaneous Article]

**Source**

**Purpose:** The Australian Women's Activity Survey (AWAS) was developed based on a systematic review and qualitative research on how to measure activity patterns of women with young children (WYC). AWAS assesses activity performed across five domains (planned activities, employment, child care, domestic responsibilities, and transport) and intensity levels (sitting, light intensity, brisk walking, moderate intensity, and vigorous intensity) in a typical week in the past month. The purpose of this study was to assess the test-retest reliability and criterion validity of the AWAS. **Methods:** WYC completed the AWAS on two occasions 7 d apart (test-retest reliability protocol) and/or wore a Manufacturing Technology Inc. (MTI) ActiGraph accelerometer for 7 d in between (validity protocol). Forty WYC (mean age 35 +/- 5 yr) completed the test-retest reliability protocol and 75 WYC (mean age 33 +/- 5 yr) completed the validity protocol. Interclass correlation coefficients (ICC) between AWAS administrations and Spearman's correlation coefficients (rs) between AWAS and MTI data were calculated. **Results:** AWAS showed good test-retest reliability (ICC = 0.80 (0.65-0.89)) and acceptable criterion validity (rs = 0.28, P = 0.01) for measuring weekly health-enhancing physical activity. AWAS also provided repeatable and valid estimates of sitting time (test-retest reliability, ICC = 0.42 (0.13-0.64); criterion validity, rs = 0.32, (P = 0.006)).
Conclusion: The measurement properties of the AWAS are comparable to those reported for existing self-report measures of physical activity. However, AWAS offers a more comprehensive and flexible alternative for accurately assessing different domains and intensities of activity relevant to WYC. Future research should investigate whether the AWAS is a suitable measure of intervention efficacy by examining its sensitivity to change.

Author
BONINI, MATTEO; BRAIDO, FULVIO; BAIARDINI, ILARIA; DEL GIACCO, STEFAN; GRAMICCIIONI, CLAUDIA; MANARA, MASSIMO; TAGLIAPIETRA, GIULIA; SCARDIGNO, ANNA; SARGENTINI, VITTORIO; BROZZI, MARIO; RASI, GUIDO and BONINI, SERGIO

Title
AQUA(C): Allergy Questionnaire for Athletes. Development and Validation: Development and Validation.[Miscellaneous Article]

Source

Abstract
Purpose: Despite the high and increasing prevalence of allergic diseases in athletes, allergy diagnostics is not part of the routine medical examination in sports medicine. This study reports the development and validation of an easy and reliable questionnaire for screening allergy in athletes. Methods: AQUA(C) was derived from the European Community Respiratory Health Survey Questionnaire. On the basis of open interviews with team doctors, coaches, and athletes, questions were added about: the type, duration, and intensity of training; exercise-related allergic and infectious symptoms; social habits (smoking); drug and food supplements intake; antidoping regulations. The final version of the questionnaire, made of 25 selected questions, was validated in 128 professional soccer players who underwent accurate history taking, medical examination, skin prick testing, and/or specific IgE determination. On the basis of the correlation with objective allergy (positive skin tests to at least one allergen), questions were scored from 1 to 5 according to their positive likelihood ratio. Results: Skin tests (gold standard for validation) were positive in 46.8% of soccer players. Mean total AQUA(C) score was 9.4 +/- 7.8 in allergic athletes versus 1.3 +/- 2.3 in nonallergic athletes. A total AQUA(C) score of >=5 was shown to have the best positive predictive value for allergy (0.94) with a specificity of 97.1% and a sensitivity of 58.3%. Conclusions: AQUA(C), produced in 10 European languages, is a validated, easy, and reliable tool for calling attention on the high prevalence of allergy in athletes.

Author
WILLIAMS, PAUL T.

Title
Incident Diverticular Disease Is Inversely Related to Vigorous Physical Activity.[Miscellaneous Article]
Purpose: In 1995, the Health Professionals Follow-up Study published an isolated report of lower diverticular disease risk in physically active men, particularly among those who ran. The purpose of this article was to assess whether this finding can be verified among older men and women of the National Runners' Health Study.

Methods: Survival analyses were applied to incident disease occurring during 7.7 yr of follow-up in 9072 men and 1664 women, representing 84% follow-up of the original >=50-yr-old cohort. In addition to the usual running distance (km\(\text{d}^{-1}\)), 80% of the baseline respondents included 10-km footrace performance times (a measure of cardiorespiratory fitness). Results were adjusted for age, sex, and reported intakes of meat, fish, fruit, and alcohol. Results: A total of 127 men and 21 women reported clinically diagnosed diverticular disease since baseline. The risk for incident diverticular disease decreased 6.2% per km\(\text{d}^{-1}\) run (\(P = 0.04\)). Relative to men and women who ran <=2 km\(\text{d}^{-1}\), those who ran an average of >8 km\(\text{d}^{-1}\) had 48% lower risk (\(P = 0.05\)). Each meter-per-second increment in the 10-km performance was associated with a 68% risk reduction (\(P = 0.04\)). Men and women who ran >4 m\(\text{s}^{-1}\) had 70% lower risk for diverticular disease than those who ran <=2.8 m\(\text{s}^{-1}\) (\(P = 0.01\)), which persisted when adjusted for baseline body mass index (69% risk reduction, \(P = 0.02\)) or usual running distance (36% risk reduction, \(P = 0.03\)). Conclusion: These results demonstrate an inverse association between vigorous physical activity and incident diverticular disease among older men and women but are limited by their reliance on self-reported physician diagnosis.
Assessment of Risk Factors: Participants completed 4 self-report questionnaires: (1) Medical Questionnaire, (2) Body Checking Questionnaire, (3) Empathy Index for Children and Adolescents, and (4) Buss-Perry Aggression Questionnaire. Main Outcome Measures: Participants were followed through the season for injury reports. The injury definition included any hockey injury resulting in medical attention, the inability to complete a hockey session, and/or missing a subsequent hockey session. Results: Body checking players reported more positive attitudes toward body checking (35.59; 95% confidence interval [CI]: 34.52-36.65) than non-body checking players (22.43; 95% CI, 21.38-23.49; t = -17.34; P < 0.00005). There was no significant difference in the empathy scores between cohorts (t = 1.51, P = 0.13). The mean aggression score for the body checking players (76.22; 95% CI, 73.18-79.25) was significantly higher than the mean for the non-body checking players (70.57; 95% CI, 67.35-73.80; t = -2.52; P = 0.013). Conclusions: Body checking seems to influence attitudes toward body checking and aggression, but attitudes toward body checking, empathy, and aggression did not influence injury rates.

Author: Lau, Brian; Lovell, Mark R; Collins, Michael W and Pardini, Jamie
Title: Neurocognitive and Symptom Predictors of Recovery in High School Athletes.

Objectives: The purpose of this study was to identify specific symptom and neuropsychological test patterns that might serve as prognostic indicators of recovery in concussed high school football players. The recently proposed simple versus complex concussion classification was examined and specific symptom clusters were identified. Design: Case-control study. Setting: High school football. Participants: Subjects were 108 recently concussed male high school football athletes between the ages of 13 and 19 (mean, 16.01) years. Assessment of Risk Factors: Participants were evaluated by utilizing the Immediate Postconcussion Assessment and Cognitive Testing computer-based neurocognitive test battery at before injury and within an average of 2.23 days of injury. All athletes were followed until they met criteria for clinical recovery. Main Outcome Measures: Symptom ratings and neurocognitive test performance. Results: Both neurocognitive test results and self-reported symptom data had prognostic value in determining time to clinical recovery. Self-reported cognitive decline, Immediate Postconcussion Assessment and Cognitive Testing reaction time, and migraine headache symptoms were associated with longer time to clinical recovery. Overall, these difficulties were predictive of concussions that were retrospectively classified as complex. Conclusions: Specific symptom clusters and neurocognitive test results may have predictive
value to classifying and managing concussions.

Author
Sullivan, S John; Bourne, Liam; Choie, Sharon; Eastwood, Brigitte; Isbister, Sarah; McCrory, Paul and Gray, Andrew

Title
Understanding of Sport Concussion by the Parents of Young Rugby Players: A Pilot Study.[Report]

Source

Abstract
Objective: Establish the knowledge and beliefs of the parents of high school rugby players about concussion. Design: Descriptive cross-sectional intercept style face-to-face pilot survey. Setting: The survey was conducted during high school rugby games. Participants: Two hundred parents of male high school rugby players who were attending their teenagers' games. Main Outcome Measures: Exploratory analysis of the closed- and open-ended questionnaire. Concussion signs and symptoms were subsequently mapped onto the framework of the Sport Concussion Assessment Tool. Results: Most parents (83%; 165 of 198) reported that they were able to recognize a concussion in their teenager and provide a list of well-accepted signs and symptoms. Nearly all (96%; 188 of 196) were aware of the risks of continuing to play while concussed, and approximately half (51%; 99 of 196) were aware of return-to-play guidelines/recommendations after a concussion. Conclusions: Parents of male high school rugby players reported having basic knowledge of concussion symptoms and the seriousness of concussion. Parents are potentially key figures in the detection of a possible concussion in the postgame/practice home environment.

Author
Leicht, Anthony S. and Crowther, Robert G.

Title
Influence of non-level walking on pedometer accuracy

Source

Abstract
The YAMAX Digiwalker pedometer has been previously confirmed as a valid and reliable monitor during level walking, however, little is known about its accuracy during non-level walking activities or between genders. Subsequently, this study examined the influence of non-level walking and gender on pedometer accuracy. Forty-six healthy adults completed 3-min bouts of treadmill walking at their normal walking pace during 11 inclines (0-10%) while another 123 healthy adults completed walking up and down 47 stairs. During walking, participants wore a YAMAX Digiwalker SW-700 pedometer with the number of steps taken and registered by the pedometer recorded. Pedometer difference (steps registered - steps taken), net error (% of steps taken), absolute error (absolute % of steps taken) and gender were examined by repeated measures two-way ANOVA and Tukey's post hoc tests. During incline walking, pedometer
accuracy indices were similar between inclines and gender except for a significantly greater step difference (-7 ± 5 steps vs. 1 ± 4 steps) and net error (-2.4 ± 1.8% for 9% vs. 0.4 ± 1.2% for 2%). Step difference and net error were significantly greater during stair descent compared to stair ascent while absolute error was significantly greater during stair descent compared to stair ascent. The current study demonstrated that the YAMAX Digiwalker SW-700 pedometer exhibited good accuracy during incline walking up to 10% while it overestimated steps taken during stair ascent/descent with greater overestimation during stair descent. Stair walking activity should be documented in field studies as the YAMAX Digiwalker SW-700 pedometer overestimates this activity type.

Author Bush, Ruth A
Title Female high-school varsity athletics: An opportunity to improve bone mineral density
Abstract The present study investigated whether moderate, organized physical activity during high school has a positive residual effect on bone mineral density (BMD) in 30-35-year-old females. Seventy-three female former high-school varsity athletes and 67 self-reported low-activity age-matched controls completed a collegiate women's health survey and participated in a one-time clinical visit with bone scan. Lumbar (L1-L4) spine BMD, total hip BMD, percentage body fat, age at menarche, history of amenorrhea, family history of osteoporosis, college alcohol consumption, number of high school varsity seasons, as well as current nutritional intake (including calcium), number of weekly weight training sessions, and caloric expenditure were assessed. Using a saturated linear regression model, current percentage body fat and number of high school seasons predicted 22% of the observed variation in total hip BMD and 25% of the observed variation of lumbar (L1-L4) spine BMD (P < 0.001). High school athletes were more likely to be frequent adult exercisers (P < 0.001). Athletic participants were more likely to have denser hip and spine bones than low-activity controls. Results suggest that participation in high school athletics is associated with greater BMD. Additionally, the varsity athletes continued to exercise frequently in their early 30s.

Author Mihalik, Jason P.; Ondrak, Kristin S.; Guskievicz, Kevin M. and McMurray, Robert G.
Title The effects of menstrual cycle phase on clinical measures of concussion in healthy college-aged females
Abstract The management of concussion and mild traumatic brain injury is an
area of clinical uncertainty for many sports medicine professionals. While recent studies suggest sex differences in neurocognitive function may exist, our understanding of the effects of menstrual cycle phase and oral contraceptive pill (OCP) use in healthy females is limited. The purpose of this study was to investigate whether there were changes in neurocognitive function, postural stability and self-reported symptoms between the early and late stages of the menstrual cycle, and also to identify whether performance across menstrual cycle would differ between females using OCP and eumenorrheic females not using OCP. Healthy college-aged females completed a standard concussion test battery including computerised assessment of neurocognitive function, postural stability and symptom status. Participants completed the counterbalanced testing design during the early and late phases of their menstrual cycle. No significant main effects or interactions for any neurocognitive function or postural stability outcome measure were observed. Eumenorrheic females endorsed a higher number of symptoms and reported an increased symptom severity score compared to females using OCP. Menstrual cycle phase had no effect on the total severity or the number of symptoms endorsed. These results suggest preseason neurocognitive and postural stability baseline tests are stable across the menstrual cycle, regardless of OCP use. Therefore, decreased performance on these measures following a suspected concussion is likely not attributable to menstrual cycle phase or use of OCP.

<table>
<thead>
<tr>
<th>Author</th>
<th>Karin Monshouwer, Margreet ten Have, Mireille van Poppel, Han Kemper and Wilma Vollebergh</th>
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<tbody>
<tr>
<td><strong>Title</strong></td>
<td>Low physical activity in adolescence is associated with increased risk for mental health problems</td>
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<tr>
<td><strong>Source</strong></td>
<td>Medicina Sportiva 2009 vol. 13, Issue 2</td>
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<td><strong>Aim</strong>:</td>
<td>To investigate physical activity levels in adolescence and to assess the independent association with a wide range of mental health problems.</td>
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<td><strong>Methods</strong>:</td>
<td>Data were used from 7,304 adolescents aged 11-16 years drawn from the 2001 Dutch HBSC school survey. Physical activity and mental health were measured using validated instruments (the moderate-to-vigorous physical activity screening measure (MVPA) and the Youth Self Report (YSR) for use among children and adolescents.</td>
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<tr>
<td><strong>Abstract</strong></td>
<td><strong>Results</strong>: Only 39.8% of the respondents met the guideline for physical activity. Almost one in seven respondents (13.4%) were categorized as inactive, with particular high rates among the 16 year olds (23.8%) and respondents from low socio-economic status families (23.1%). While adjusting for confounding factors, inactive respondents were at greater risk for withdrawn behavior (OR=2.04), anxious/depressed feelings (OR=1.73) and aggressive behavior (OR=1.49) as compared to those who met the physical activity guideline.</td>
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Conclusions: This study adds to a small, but growing number of studies reporting evidence for a link between physical inactivity and mental health problems in adolescence. Although results are promising, further research is necessary to assess the possibilities of physical activity as one of the instruments in the treatment and prevention of mental health problems.

Author
Jan Bilski, Aneta Teległów, Janina Zahradnik-Bilska, Artur Dembiński, Zygmunt Warzecha

Title Effects of exercise on appetite and food intake regulation

Source Medicina Sportiva 2009 vol. 13, Issue 2

In this review, we discuss the effects of acute and chronic exercise on appetite and food intake regulation, the potential mechanisms involved and its relationship with hormonal and metabolic changes that affect energy balance. The mechanisms of post exercise short-term appetite modification remain unclear and although the role of orexigenic and anorexigenic peptides is possible hypotheses, it still remains unproven. Motivation to eat and food intake in response to acute exercise seem to be modulated by gender, body weight and eating behavior. In general, acute exercise has no effect on subsequent EI in men, whereas in women an increase in EI is usually observed, either decreasing or abolishing the effects of exercise on EB. Normal weight women, unlike men, report an increased palatability of foods with exercise and do not experience the transient suppression of hunger observed immediately after exercise. The evidence to date emphasizes the need to increase physical exercise levels, particularly because of the high prevalence of obesity. More research is needed to explain the mechanisms behind the post exercise adjustments in short-term appetite control, and their long-term consequences.
Upper and lower trapezius muscle activity in subjects with subacromial impingement symptoms: Is there imbalance and can taping change it?

**Abstract**

To investigate (i) whether subacromial impingement symptoms (SIS) were associated with upper and lower trapezius muscle imbalance and (ii) the effect of a scapula taping technique on upper and lower trapezius muscle activity. **Design**

Cross-sectional study with nested within-subject intervention. **Setting:**

University research laboratory. **Participants:** Subjects who demonstrated SIS (n = 16) on clinical testing and an age and gender matched group of asymptomatic subjects (n = 32). **Main outcome measures:** Surface electromyography (EMG) to measure activity in the upper (UFT) and lower (LFT) fibres of trapezius during repeated humeral elevation in the scapular plane. **Results:**

Symptomatic subjects demonstrated a significantly (95% CI 2.13 to 4.17, p = 0.019) higher ratio of UFT:LFT activity than the asymptomatic subjects (95% CI 1.35 to 2.25). With tape in situ the symptomatic subjects demonstrated a significant (95% CI -8.6% to -17.3%, p < 0.001) reduction in UFT activity but no significant (95% CI +2.8% to -17.5%, p = 0.145) change in activity of LFT. No relationship (r = -0.116, p = 0.669) was found between the degree of underlying muscle imbalance and the reduction in UFT under the taped condition for the symptomatic group. **Conclusion:** Subacromial impingement symptoms are associated with altered upper and lower trapezius muscle activity which can be partially addressed by the application of tape.

Humeral torsion and passive shoulder range in elite volleyball players

**Abstract**

To evaluate variations in humeral torsion in elite male volleyball players and determine whether these changes are related to training history, retrospective injury history and volleyball performance. **Design and setting:** Cross sectional design. **Participants:** Twenty-four elite male volleyball players. **Main outcome measures:** Humeral torsion, passive gleno-humeral rotation ranges and the available internal and external rotation from the humeral torsion neutral position of the dominant and non-dominant arm were measured. Training history and retrospective injury status were ascertained from a questionnaire. Performance was assessed by coach perceived spiking ability and peak serve velocity measures. **Results:** Humeral
torsion angles demonstrated the dominant arm to be on average 9.6° more retroverted than the non-dominant arm (p = 0.00). In the comparison of volleyball players with and without a history of overuse upper limb injury the most significant finding is on the non-dominant side, those with a history of injury had significantly decreased available external rotation from the humeral torsion neutral position (mean difference = -15.1, p = 0.04). There was an unexpected negative weak relationship between age commenced and decreased humeral retroversion (r = -0.413, p = 0.045). There did not appear to be any relationship between humeral torsion and performance measures. Conclusion: the dominant arm of elite male volleyball athletes is more retroverted. There was a tendency for stronger findings in the non-dominant arm in volleyball players with retrospective injury history. We were unable to find any significant correlation between humeral torsion angle and performance measures.

Author
Moraes, Antonio C.; Pinto, Ronei S.; Valamatos, Maria Jose; Valamatos, Maria Joan; Pezarat-Correia, Pedro L.; Okano, Alexandre H.; Santos, Pedro M. and Cabri, Jan M.

Title
EMG activation of abdominal muscles in the crunch exercise performed with different external loads

Source

The aim of this study was to describe by means of surface electromyography the activation of the rectus abdominis, obliquus externus and rectus femoris muscles during the "crunch" abdominal exercise performed with loads. Methods: Thirteen subjects performed crunch exercises with loads representing 80, 60, 40 and 20% of the 1-RM (100%) in a random order with the subjects drawing lots, and with a 5 min rest between sets. Surface bipolar EMG electrodes were used. The root mean square of the EMG was calculated for the first repetition of each load. Differences between conditions were tested using a one way ANOVA for repeated measures. Post-hoc Bonferroni tests was used to detect significant differences between specific loads (p < 0.05). Results: an average of the percentage values of all studied abdominal muscles was used as a representative value of abdominal synergy (Ab Syn). In general it can be concluded that the abdominal muscles were significantly more recruited in the 100% load condition. Abdominal activation significantly differed between the various loads; however, in general adjacent loads (20 vs. 40% - 1-RM) did not differ. Conclusions: These results suggest that for young, healthy and physically active adults when the objective is progression in the training process of abdominal force, the option ought to be for changes of load superior to 20% of the 1-RM.

Author
Newsham-West, R.; Button, C.; Milburn, P.D.; Mündermann, A. Sole,
G.; Schneiders, A.G. and Sullivan, S.J.

**Title**  
Training habits and injuries of masters' level football players: A preliminary report

**Source**  

To profile training habits and injuries in football players participating in a national Masters tournament. **Methods:** A cross-sectional retrospective study design was used to survey male football players attending the 2008 New Zealand Masters Games. Information regarding player demographics, football injuries, football related training, and risk factors for injury were collected. **Results:** 199 Players were recruited, with a median age of 44 yrs (range 35-73) and a median football playing history of 15 yrs (range 0-66). Irrespective of age, 112 (84%) players included a warm-up and 104 (78%) included a stretching regime in their regular training programme. In the 12 months prior to the tournament, 128 football related injuries were reported by 93 players (64 injuries/100 players or 46 injured players/100 players). The most frequently injured region was the lower limb; specifically the lower leg (n = 23), ankle (n = 18), hamstring (n = 17), knee (n = 15), and Achilles tendon (n = 15). **Conclusion:** this study provides a preliminary insight into the training habits and injury profiles of Masters football players. Despite all players including some form of injury prevention strategy in their training, a significant number of players experienced an injury in the 12 months prior to the tournament.

**Author**  
D E Meuffels, M M Favejee, M M Vissers, M P Heijboer, M Reijman, and J A N Verhaar

**Title**  
Ten year follow-up study comparing conservative versus operative treatment of anterior cruciate ligament ruptures. A matched-pair analysis of high level athletes

**Source**  

**Objective:** To compare long term outcome of highly active patients with anterior cruciate ligament ruptures treated operatively versus non-operatively. **Design:** We reviewed high level athletes with an anterior cruciate ligament rupture on either MRI or arthroscopic evaluation more than 10 years previously, who were treated conservatively. They were pair-matched with patients who had had an anterior cruciate ligament reconstruction with bone-patella-tendon-bone, with respect to age, gender and Tegner activity score before injury. **Participants:** In total 50 patients were pair-matched. **Results:** We found no statistical difference between the patients treated conservatively or operatively with respect to osteoarthritis or meniscal lesions of the knee, as well as activity level, objective and subjective functional outcome. The patients who were treated operatively had a significantly better stability of the knee at examination. **Conclusion:** We conclude that the instability repair using a bone-patella-tendon-bone anterior
cruciate ligament reconstruction is a good knee stabilising operation. Both treatment options however show similar patient outcome at 10 year follow up.

**Author**
M Posthumus, A V September, M Keegan, D O’Cuinneagain, W Van der Merwe, M P Schwellnus and M Collins

**Title**
Genetic risk factors for anterior cruciate ligament ruptures: COL1A1 gene variant

**Source**

**Abstract**

**Background:** Anterior cruciate ligament (ACL) ruptures are considered the most severe injury sustained in sports. Although various intrinsic and extrinsic risk factors have been identified, the exact aetiology of the injury is not yet fully understood. Recently, the gene encoding for the α1 chain of type I collagen (COL1A1) has been shown to be associated with cruciate ligament ruptures and shoulder dislocations. **Objective:** To determine whether the functional Sp1 binding site polymorphism within intron 1 of the COL1A1 gene is associated specifically with ACL ruptures in an independent population. **Methods:** 117 Caucasian participants with surgically diagnosed ACL ruptures, and 130 Caucasian physically active controls without any history of previous ligament or tendon injuries were recruited for this case–control genetic association study. All participants were genotyped for the COL1A1 Sp1 binding site polymorphism (G/T; rs1800012). **Results:** The rare TT genotype was significantly (p = 0.031, OR = 0.08, 95% CI <0.01 to 1.46) under-represented in the ACL group (0 out of 117, 0%), compared with the controls (6 out of 130, 4.6%). **Conclusion:** The TT genotype of the COL1A1 Sp1 binding site polymorphism was significantly under-represented in South African participants with ACL ruptures. We propose that this sequence variant be the first specific genetic element to be included in multifactorial models developed to understand the aetiology and risk factors for ACL rupture.

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**Author**
A V September, J Cook, C J Handley, L van der Merwe, M P Schwellnus, and M Collins

**Title**
Variants within the COL5A1 gene are associated with Achilles tendinopathy in two populations

**Source**

**Abstract**

**Objectives:** A COL5A1 gene variant was shown to be associated with chronic Achilles tendinopathy in a South African population. The aim of this case–control genetic association study was to investigate the BstUI and DpnII restriction fragment length polymorphisms (RFLP) in a second population from Australia and to identify a predisposing haplotype for Achilles tendinopathy in both populations. **Methods:** 85
Australian and 93 South African patients with tendinopathy, as well as 210 Australian and 132 white South African control subjects were genotyped for the BstUI (rs12722) and DpnII (rs13946) RFLP, as well as markers rs10858286, rs3196378, rs11103544, rs4504708 and rs3128575. **Results:** The BstUI RFLP (p<0.001) and marker rs3196378 (p = 0.016) were associated with chronic Achilles tendinopathy in Australian subjects. Individuals within both populations with a CC genotype for the BstUI RFLP had a significantly decreased risk of developing tendinopathy versus any other genotypes (Australian odds ratio 0.42, 95% CI 0.20 to 0.86, p = 0.017). The TC inferred haplotype (rs12722, rs3196378) was found to be overrepresented (global p = 0.008) in the South African tendinopathy group compared with all other haplotypes. **Conclusion:** The BstUI RFLP is associated with chronic Achilles tendinopathy in a second population and a region within the COL5A1 3' untranslated region may predispose individuals to an increased risk of developing chronic Achilles tendinopathy.

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**Author** R J Butler, K I Minick, R Ferber and F Underwood

**Title** Gait mechanics after ACL reconstruction: implications for the early onset of knee osteoarthritis

**Source** Br. J. Sports Med. 43: 366-370

**Background:** Individuals who sustain a rupture of the anterior cruciate ligament (ACL) are at an increased risk for developing early-onset knee osteoarthritis (OA). The mechanism behind the early onset of the disease is still unknown. Knee OA progression has been previously examined by calculating the internal knee-abduction moment during gait. However, knee-joint moments have not been examined in individuals after ACL reconstruction as a potential mechanism for disease progression in early knee OA. **Objective:** To determine if individuals who have undergone ACL reconstruction exhibit altered gait mechanics that may be associated with knee OA progression. **Methods:** In total, 17 people who had previously undergone ACL reconstruction were enrolled in the study. A matched control group was recruited for comparison. All participants underwent gait analysis at an intentional walking speed to examine variables previously associated with knee OA progression, primarily the internal peak knee-abduction moment, during gait. One way ANOVAs were performed to examine differences in gait mechanics between the two groups. All joint moments were calculated as internal moments. **Results:** The peak knee-abduction moment was increased by 21% in the ACL compared with the control group (p = 0.04). No other differences were seen in frontal plane knee or hip mechanics. **Conclusion:** It seems that individuals who have undergone ACL reconstruction exhibit an increased peak knee-abduction moment that may establish a potential mechanism of the earlier onset of knee OA.
Preoperative quadriceps strength is a significant predictor of knee function two years after anterior cruciate ligament reconstruction

Objective: To identify preoperative predictive factors for knee function two years after reconstructive surgery of the anterior cruciate ligament (ACL). The main hypothesis was that preoperative quadriceps strength would be the most significant predictor for knee function two years after reconstructive surgery. Design: Cohort study. Setting: ACL injured individuals treated at a University Hospital and an outpatient clinic in Oslo, Norway. Participants: Seventy-three individuals with complete unilateral rupture of the ACL scheduled for reconstruction with a bone-patellar-bone autograft were included in the study, from where 60 were available for two-year follow up and included in the final analyses. Interventions: Not applicable. Main outcome measurements: Identification of baseline independent variables that may predict knee function assessed with the Cincinnati Knee Score as dependent variable two years after ACL reconstruction. Results: Quadriceps muscle strength, meniscus injury and the Short-Form-36 Bodily Pain sub score were identified as significant predictors for knee function assessed from the Cincinnati Knee Score two years after ACL reconstruction. Individuals with preoperative quadriceps strength deficits above 20% also had persistent significantly larger strength deficits two years after surgery. Conclusions: Preoperative quadriceps muscle strength deficits and meniscus injuries have significant negative consequences for the long-term functional outcome after ACL reconstruction. From our findings we suggest that ACL reconstruction should not be performed before quadriceps muscle strength deficits of the injured limb is less than 20% of the uninjured limb.
Method: 87 athletes completed the Emotional Response of Athletes to Injury Questionnaire (ERAIQ) and the ACL Return to Sport after Injury scale (ACL-RSI) at 3, 6 and 12 months following ACL reconstruction surgery. Physical outcome measures were also taken at each time point. Results: At 12 months 44 (51%) participants had returned to competitive sport and 43 (49%) participants had not returned. There were no differences in physical recovery or scores on the ERAIQ between the two groups. Participants who had returned to competitive sport at 12 months, however, scored significantly higher on the ACL-RSI scale (reflecting a more positive psychological response about sport participation) at both 6 and 12 months than participants who had not returned to competitive sport. Conclusions: During rehabilitation there are significant psychological differences regarding sport resumption between athletes who do, and do not, resume competitive sport 12 months following ACL reconstruction. These differences occur as early as 6 months postoperatively and highlight the importance of addressing all aspects of an athlete's recovery in order to help facilitate the athlete returning to sport.

Author  S O Azubuike, and O H Okojie
Title  An epidemiological study of football (soccer) injuries in Benin City, Nigeria

Abstract

**Background:** The increase in popularity of soccer and expectations from players make significant numbers of soccer injuries conceivable. Concerns have been expressed about the demand placed on the modern-day footballer and translation of these physical and mental demands into injuries. Despite the popularity and importance of the game of soccer in Benin, no detailed study on the occurrence of soccer injury has been carried out. **Objective:** The study sets out to describe and assess the determinants and effects of soccer injuries. **Methodology:** Seven clubs (196 players) from the premier, professional, national and state amateur clubs were studied using a descriptive cross-sectional study design. A pre-designed semi-structured questionnaire and key informants interview guide were used for data collection. Descriptive and inferential statistics were used in the analysis, with significant levels generally taken at 5% level of significance. **Results:** A total of 196 players sustained 204 injuries with a prevalence rate of 81.6%. More injuries were recorded during matches (46.1%) than during training (36.8%). Injuries occurring by body contact constituted 62.3% of the total injuries. The ankle (25%) was the most affected site, followed by the knee (20.1%), while sprain injury (33.3%) and strain (13.2%) were the commonest injury types. Moderate injury (28.9%) was the highest form of severity recorded. Recurrent injury accounted for 38.8% of injuries, occurring more in training (44.9%) than in matches (36.7%). A greater percentage (86.8%) of the injuries were traumatic in nature, with tackling (44.6%)
being the commonest mechanism. Defenders (34.3%) and strikers (31.4%) had higher injury occurrence. The association between the player’s role and the mechanism of injury was significant (p = 0.02), while that between weather condition and injury type was very significant (p = 0.004). Moreover, the association between experience and mechanism of injury was extremely significant (p<0.001). The study also shows that injury has economic, physical and psychological impacts on players. **Conclusion:** A prevalence rate of 81.6% was recorded. Sprain was the leading injury type, while the ankle was the most affected anatomical site. Factors such as weather, previous injury, experience, role, and activity tend to influence injury occurrence. Soccer injury also has economic, physical and psychological implications. It is therefore recommended that preventive measures such as adequate treatment of injuries, full rehabilitation after injuries, use of protective equipment, appropriate exercises and warm-ups, continual team education on injury managements and skill improvement, etc., be utilised and enforced to protect this group of sport workers.

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**Author**
BROWN, MARY BETH; MILLARD-STAFFORD, MINDY L.; ALLISON, ANDREW R

**Title**
Running-Specific Prostheses Permit Energy Cost Similar to Nonamputees. [Miscellaneous Article]

**Source**

**Abstract**
Improvements in prosthesis design have facilitated participation in competitive running for persons with lower limb loss (AMP). **Purpose:** The purpose of this study was to examine the physiological responses of AMP using a run-specific prosthesis (RP) versus a traditional prosthesis (P) and cross-referenced with nonamputee controls (C) matched by training status, age, gender, and body composition during level treadmill running (TM). **Methods:** Twelve trained runners completed a multistage submaximal TM exercise during which HR and oxygen uptake (V\[overdot\]O2) were obtained. Steady state measures at 134 m/[middle dot]min-1 were compared between RP and P in AMP. AMP using RP (AMP-RP) and C also performed a continuous speed-incremented maximal TM test until volitional fatigue. **Results:** RP elicited lower HR and V\[overdot\]O2 compared with P in AMP. Using RP, AMP achieved similar V\[overdot\]O2max and peak TM speed compared with C but with higher HRmax. Relative HR (%HRmax) and oxygen uptake (%V\[overdot\]O2max), the regression intercept, slope, SEE, and Pearson’s r correlation were not different between AMP-RP and C. %HRmax calculated with the published equation, %HRmax = 0.73(%V\[overdot\]O2max) + 30, was not significantly different from actual %HRmax for AMP-RP or C in any stage. **Conclusions:** RP permits AMP to attain peak TM speed and aerobic
capacity similar to trained nonamputees and significantly attenuates HR and energy cost of submaximal running compared with a P. Use of RP confers no physiological advantage compared with nonamputee runners because energy cost at the set speed was not significantly different for AMP-RP. Current equations on the basis of the relative HR-V\[spacing dot above\]O2 relationship seem appropriate to prescribe exercise intensity for persons with transtibial amputations using RP.

Author

Title Concurrent Muscle Hurt and Perceived Exertion of Children during Resistance Exercise.[Miscellaneous Article]


Purpose: Rating of muscle hurt (RMH) and RPE were concurrently measured for 10- to 14-yr-old females (n = 50) and males (n = 50) performing unilateral biceps curl (BC) and knee extension (KE) isotonic exercise. Methods: BC and KE exercises were counterbalanced within subjects. Three counterbalanced, 10 repetition sets (30%, 50%, and 70% one repetition maximum (1-RM)) were performed for both exercises. RMH and RPE were obtained for active muscles using the Children's OMNI-Hurt Scale and the Children's OMNI-Resistance Exercise Scale of Perceived Exertion, respectively. Results: For both females and males, RMH ranged across sets from 1.5 to 6.0 during BC and 3.2 to 6.7 during KE. RPE ranged from 3.4 to 8.3 during BC and 5.0 to 8.9 during KE. Ratings expressed as percent scores were lower (P < 0.01) for RMH than for RPE at the 30%, 50%, and 70% 1-RM during BC and KE for females and males. Regression coefficients for weight lifted as a function of RMH ranged from r = 0.67 to r = 0.87 (P < 0.01) for BC and KE. Correlations between RMH and RPE ranged from r = 0.19 to r = 0.82 across sets for both genders. Conclusions: Female and male children can concurrently and differentially rate their perceived intensity of muscle hurt and exertion during upper and lower body resistance exercise using numerical category metrics (i.e., OMNI scales) having construct-specific pictorial and verbal descriptors.

Author Smartt, Pamela and Chalmers, David

Title A new look at horse-related sport and recreational injury in New Zealand

Abstract

Although equestrian injury studies to date have provided useful information for injury prevention, these studies have not been detailed enough or inclusive enough, to identify and characterise all sub-populations that may be at risk. One study has reported injury rates for the population-at-risk. The present study was carried out to determine, more precisely, who is injured in horse-related activities in New Zealand, what sorts of injuries they sustain, the circumstances of injury and the cost of treatment. A novel search of linked hospital discharge and compensation claim data for 2002 and 2003 was carried out. Of 716 newly hospitalised cases, 29% were in the 5-19-year and 28% in the 35-49-year age groups. Incidence rates for regular riders peaked at 13-15 years (900/100 000) and 50+ years (880/100 000). Where the ‘place of occurrence’ was specified only 12% of cases sustained injury in a ‘sports and athletics area’. This new study has highlighted injuries occurring in farm and other ‘open’ locations such as mountains and forest, injuries to older riders and injuries to bystanders/handlers during non-organised recreational activity. Attention was drawn to the high in-patient cost of hospitalised injuries in persons >40 years and the need for injury information relating to specific riding activities. Current equestrian injury prevention tends to target young females and organised riding; in focusing on these, other significant population groups and injury mechanisms may be overlooked and opportunities for injury prevention missed.

Author
Jeremy Ingram, Brian Dawson, Carmel Goodman, Karen Wallman and John Beilby

Title
Effect of water immersion methods on post-exercise recovery from simulated team sport exercise

Source
Journal of Science and Medicine in Sport

This study aimed to compare the efficacy of hot/cold contrast water immersion (CWI), cold-water immersion (COLD) and no recovery treatment (control) as post-exercise recovery methods following exhaustive simulated team sports exercise. Repeated sprint ability, strength, muscle soreness and inflammatory markers were measured across the 48-h post-exercise period. Eleven male team-sport athletes completed three 3-day testing trials, each separated by 2 weeks. On day 1, baseline measures of performance (10 m × 20 m sprints and isometric strength of quadriceps, hamstrings and hip flexors) were recorded. Participants then performed 80 min of simulated team
sports exercise followed by a 20-m shuttle run test to exhaustion. Upon completion of the exercise, and 24 h later, participants performed one of the post-exercise recovery procedures for 15 min. At 48 h post-exercise, the performance tests were repeated. Blood samples and muscle soreness ratings were taken before and immediately after post-exercise, and at 24 h and 48 h post-exercise. In comparison to the control and CWI treatments, COLD resulted in significantly lower ($p < 0.05$) muscle soreness ratings, as well as in reduced decrements to isometric leg extension and flexion strength in the 48-h post-exercise period. COLD also facilitated a more rapid return to baseline repeated sprint performances. The only benefit of CWI over control was a significant reduction in muscle soreness 24 h post-exercise. This study demonstrated that COLD following exhaustive simulated team sports exercise offers greater recovery benefits than CWI or control treatments.

**Author** Mark E.T Willems, Tudor Hale and Carley S. Wilkinson  
**Title** Effects of manual massage on muscle-specific soreness and single leg jump performance after downhill treadmill walking  
**Source** Medicina Sportiva 2009 vol. 13, Issue 2

**Abstract**

**Introduction:** This study examined the effect of massage on delayed onset muscle soreness of quadriceps muscles and single leg vertical jump performance after downhill treadmill walking. **Methods:** Seven moderately active females (age: 19 ± 1 yr, height: 168 ± 3 cm, body mass: 63.9 ± 5.5 kg) completed a 20 min downhill walk (speed: 6.4 km·h⁻¹, gradient: −25%) as they carried a load equal to 10% of their body mass followed by one leg receiving massage for 25 min. Before, 24, 48 and 72 hr after downhill walking, delayed onset muscle soreness on a scale of 1-10 from rectus femoris (RF), vastus medialis (VM) and vastus lateralis (VL) muscles and changes in single leg vertical jump performance were measured for both legs. **Results:** Delayed onset muscle soreness was reduced by massage 48 hr post-exercise in the RF and VL ($P<0.05$) but not in the VM. Jumping performance of each leg declined after downhill walking ($P<0.001$). At 24 hours, jumping height was decreased by 19% and 21% in control and massaged leg, respectively ($P<0.05$). However, at 48 and 72 hr post-exercise, the massaged leg showed improved recovery in jumping performance. **Conclusions:** Reductions in delayed onset muscle soreness of quadriceps muscles by massage after downhill walking were muscle-specific. Massage improved functional recovery
after downhill walking.
Índice de Revistas Referenciadas

1.- **Journal of Science and Medicine in Sport.**  
Vol. 12(3). May 2009

2.- **Clinical Journal of Sport Medicine.**  
Vol. 19(3). May 2009

3.- **Medicine & Science in Sports & Exercise.**  
Vol. 41(5). May 2009

4.- **British Journal of Sports Medicine.**  
Vol. 43(5). May 2009

5.- **Medicina Sportiva**  

6.- **Physical Therapy in Sport.**  
Vol. 10(2). May 2009
NOVEDADES EN LA BIBLIOTECA

Ordenadas por materias

Los documentos referenciados en estas novedades se pueden obtener mediante el préstamo personal y/o interbibliotecario.

Los códigos alfanuméricos (signatura), que aparecen en el siguiente listado junto a cada monografía corresponden a la ubicación de los mismos en la Biblioteca.
1

**Biomechanical comparison between elite female and male baseball pitchers** / Yungchien Chu...[et al]. -- 10 p. ; 28 cm

El objetivo de este estudio fue identificar las características biomecánicas del lanzamiento de baseball en mujeres deportistas de élite. Se estudia y compara la cinemática y la cinética de 11 deportistas hombres y mujeres.


2

**A comparison between two models of shoulder muscle force estimation** / Daniel Cury Ribeiro...[et al]. -- 11 p. ; 28 cm

Las lesiones en los hombros se producen con frecuencia en el manguito rotador. Aunque existen varios modelos de valoración de fuerza muscular, es difícil asegurar que los resultados obtenidos con cada modelo sean fiables. El objetivo de este estudio fue comparar dos modelos de valoración de fuerza muscular.


3

**O’CONNOR, Kristian M.**

Comparison of selected lateral cutting activities used to assess ACL injury risk / Kristian M. O’Connor, Sarika K. Monteiro and Ian A. Hoelker. -- 9 p. ; 28 cm

El propósito de este estudio fue el de comparar la dinámica de la articulación de la rodilla de hombres y mujeres que realizan tareas recortadas para una carrera no anticipada y una maniobra recortada.


4

**External forces during actual acceleration across transition speed** / Veerle Segers...[et al]. -- 11 p. ; 28 cm

El objetivo de este estudio fue examinar la cinética del paso de caminar a correr y el de correr a caminar, cuando se acelera o desacelera a través de la aceleración de transición (a = 0.17 mos-2).

Influence of running shoe midsole composition and custom foot orthotic intervention on lower extremity dynamics during running / Christopher MacLean, Irene S. Davis and Joseph Hamill. -- 10 p. ; 28 cm

El objetivo de este estudio fue analizar la influencia de la variación de la composición de las suelas de las zapatillas de correr en la dinámica de la extremidad inferior con y sin intervención ortopédica.


In vivo three-dimensional mechanical actions of individual flexor-pronator muscles : role in elbow valgus stability / Jason E. Hsu...[et al]. -- 9 p. ; 28 cm

Se piensa que la musculatura flexora pronadora es el principal estabilizador dinámico del codo en valgo y que protege el ligamento colateral cubital. Sin embargo, las acciones multiaxiales de cada uno de los músculos que pertenecen al grupo flexor-pronador y su rol en la estabilidad en valgo no han sido investigadas cuantitativamente. Este estudio prueba la hipótesis que cada uno de los músculos del grupo flexor pronador produce un significativo momento en varo que proporciona estabilidad en valgo al codo.


Inverse dynamic analysis of the lower extremities during nordic walking, walking, and running / Felix Stief...[et al]. -- 9 p. ; 28 cm

En comparación con la marcha, la marcha nórdica presenta grandes beneficios cardiopulmonares y cardiovasculares. El objetivo de este estudio fue el de cuantificar las diferencias en la sobrecarga de las articulaciones inferiores en la marcha, la marcha nórdica y la carrera.


Lower extremity muscle functions during full squats / D.G.E. Robertson, Jean-Marie J. Wilson and Taunya A. St. Pierre. -- 7 p. ; 28 cm

El propósito de esta investigación fue determinar las funciones del glúteo máximo, bíceps femoral, semitendinoso, recto femoral, vasto lateral, soleo, gastrocnemio, tibial anterior sobre sus respectivas articulaciones durante el full squat.

9

CHALLIS, John H.
Mechanical properties of the human heel pad: a comparison between populations / John H. Challis, Chloe Murdoch, Samantha L. Winter. -- 7 p. ; 28 cm
El propósito de este estudio fue el de comparar las propiedades mecánicas de las almohadillas del talón de corredores, que cargan repetidamente sus almohadillas del talón durante el entrenamiento; con ciclistas, que no cargan sus almohadillas del talón durante el entrenamiento. Trabajo realizado con 10 corredores de larga distancia y 10 ciclistas.

10

LORAS, Havard
The muscle force component in pedaling retains constant direction across pedaling rates / Havard Loras, Gertjan Ettema and Stig Leirdal. -- 8 p. ; 28 cm
Los cambios en la velocidad de pedaleo durante el ciclismo sirven para modificar la fuerza del pedal. La efectividad de la fuerza se reduce cuando la velocidad de pedaleo se eleva.

11

Torso and hip muscle activity and resulting spine load and stability while using the ProFitter 3-D cross trainer / Priyanka Banerjee...[et al]. -- 11 p. ; 28 cm
El ProFitter 3-D Cross Trainer es un dispositivo para el entrenamiento de la estabilidad de la columna vertebral. El objetivo de este estudio fue el de cuantificar los mecanismos espinales (fuerza de comprensión, fuerza transversal y estabilidad), junto con los mecanismos de activación muscular electromiografía de superficie) del torso y la cadera durante tres ejercicios con ProFitter.

12

NOLTE, Volker
Shorter oars are more effective / Volker Nolte. -- 9 p. ; 28 cm
El propósito de esta investigación fue el de clarificar los efectos del diseño de la hoja y la longitud de la pala en la técnica de remo.

13

Strain in the tibial and plantar nerves with foot and ankle movements and the influence of adjacent joint positions / Ali M. Alshami...[et al]. -- 9 p. ; 28 cm
Se midió la presión del nervio tibial durante una dorsiflexión del tobillo en 10 cadáveres. Se midió la presión del nervio
plantar durante la extensión de los dedos del pie. El estudio de la biomecánica de los nervios proporciona un fundamento en los ejercicios de movilización para lesiones como el síndrome del túnel del tarso.


14

Material property sensitivity analysis on resonant frequency characteristics of the human spine / Li-Xin Guo...[et al]. -- 9 p. ; 28 cm

El objetivo de este estudio es investigar el efecto de los cambios en las propiedades del material de los componentes vertebrales en las características de la frecuencia resonante de la columna vertebral.


15

The effect of fatigue on the underwater arm stroke motion in the 100-m front crawl / Hiroshi Suito...[et al]. -- 9 p. ; 28 cm

El propósito de este estudio fue el de indicar el efecto de la fatiga durante la brazada en los 100 m. crol


16

Use of relative phase as a measure of motor control at the ankle in persons with cerebral palsy : a preliminary study / Jack R. Engsberg...[et al]. -- 9 p. ; 28 cm

Esta investigación ha desarrollado una medida de control motor para el tobillo en personas con parálisis cerebral usando la fase relativa. Participaron un total de 29 sujetos, 14 de ellos con parálisis cerebral espástica tipo diplégica y 15 sin discapacidad.


17

Validity of four gait models to estimate walked distance from vertical COG acceleration / Antonio M. López...[et al]. -- 8 p. ; 28 cm

Los podómetros son básicamente contadores de pasos usados para estimar la distancia caminada por un peatón. Aunque la precisión para calcular el número de pasos es bastante certera (en torno al 1%), su fiabilidad para calcular la distancia es mucho más pobre, porque no consideran la variabilidad intrínseca del modo de andar. Este estudio compara la precisión y la exactitud.

ALFARO-LEFEVRE, Rosalinda

Aplicación del proceso : fomentar el cuidado en colaboración /
Rosalinda Alafa-LeFevre. -- 5ª ed. -
-- XXIV, 274 p. : il. ; 24 cm
Este libro cumple con la función de introducir a profesionales
y estudiantes de enfermería en el proceso enfermero, incluyendo
anécdotas y casos de la vida real. De esta manera, teoría y práctica se complementan adecuadamente para que el profesional pueda abordar las situaciones clínicas con criterios seguros. El principal objetivo de este libro es ofrecer, de una manera clara y concisa, principios y reglas que deben seguirse, basadas en experiencias y casos concretos. Finalmente, como ayuda, se han incluido ejercicios críticos colocados en páginas estratégicas.
CMGR/0032

20

LUIs RODRIGO, Maria Teresa

De la teoría a la práctica: el pensamiento de Virginia Henderson el siglo XXI. -- 3ª ed. -- Barcelona :
Incluye bibliografía e índices
En la tercera edición de este libro, se han recogido toda una serie de conceptos y experiencias nuevas producto de la constante evolución y progreso de la teoría y la práctica de la profesión. Ello supone una profunda revisión y actualización de textos, de estrategias y criterios que fundamentan la práctica diaria de esta disciplina asistencial. Se trata de una obra sumamente útil y eficaz, ya que ha sido elaborada por autoras de prestigio internacional y con una amplia experiencia

19

Nueva edición de los diagnósticos enfermeros más difundidos y aceptados a nivel mundial y los que más han contribuido al desarrollo de la profesión, ya que permite detallar un plan de cuidados, definir unos resultados esperados (NOC) y las intervenciones de enfermería (NIC) necesarias para su consecución.
- La obra se divide en 3 apartados: el primero incluye el contenido tradicional de Diagnósticos enfermeros de la NANDA; en el segundo se describe la estructura y el modo en que se gestó la Taxonomía II y el tercero expone las guías para la presentación de nuevos diagnósticos, el proceso para apelar la decisión del Comité para la revisión de los diagnósticos, el glosario, etc.
CMGR CMGR/0029
enfermera. De esta manera, el libro se convierte en un instrumento imprescindible, que aborda con rigor, precisión y claridad, los procesos y modelos, la relación entre ellos y el mejor método de aplicación práctica de los mismos. De gran valor para profesionales, docentes y estudiantes de enfermería.

CMGR/0030

21

DILLON, Patricia M.
Valoración clínica en enfermería proporciona información sobre los aspectos de la valoración del paciente que tienen más probabilidades de ser requeridos en el marco clínico, y fomenta un abordaje integral enfocado a las relaciones entre los diferentes sistemas corporales. Las listas con viñetas y la presentación tabular del contenido principal simplifican el acceso a la información; la fotografía a todo color y la explicación detallada de las técnicas de valoración facilitan el seguimiento del contenido. Esta guía es de gran utilidad para depurar las habilidades de valoración, diferenciar lo normal de lo anormal y validar los hallazgos de evaluación.
ISBN 978-970-10-6687-4
CMGR/0031
Fisiología

22

WILMORE, Jack H.
-- XV, 776 p. : il. y col. ; 28 cm
Incluye bibliografía, índice y glosario

El cuerpo humano es una máquina asombrosamente compleja: todas sus células y tejidos se comunican entre sí. Tanto al descansar como al hacer ejercicio, nuestro cuerpo está fisiológicamente activo.

Conforme aumenta nuestra actividad física, también aumenta la actividad fisiológica de nuestros músculos que requieren más nutrientes, más oxígeno, más actividad metabólica y, por lo tanto, más eliminación de productos de desecho. En este libro el lector encontrará la respuesta a cómo reacciona nuestro cuerpo a las elevadas exigencias fisiológicas de la actividad física.


Fisioterapia

23

TIXA, Serge
Bibliografía e índice de términos
Contiene: T. I: Cuello, tronco, miembro superior; T. II: Miembro inferior

Esta obra pone a disposición del lector un atlas ilustrado al servicio de una mayor comprensión de la anatomía palpatoria. El método presentado, así como la rica iconografía convierten este libro en una herramienta precisa y concreta para: un correcto diagnóstico, ya que la palpación es uno de los puntos básicos del examen clínico y una mejor aplicación de las técnicas manuales.

Incluye más de 412 fotografías que se distribuyen en cinco capítulos: cuello, tronco, sacro, hombro, brazo, codo, antebrazo, muñeca y mano dividiendo cada capítulo, si la región topográfica lo permite, en cuatro partes: osteología, miología, artrología, nervios y vasos. Se trata de una manual de referencia y guía metodológica, dirigido tanto a estudiantes como profesionales de fisioterapia, osteología, enfermería y medicina manual.

MCA/0026/1
MCA/0026/2
Medicina del deporte

24


Incluye referencias bibliográficas e índice

La medicina deportiva es una disciplina en constante evolución. La base científica y de investigación se está ampliando, al igual que las opiniones sobre el tratamiento, las estrategias preventivas, y la prescripción del ejercicio óptimo. Los médicos están buscando pruebas, y los pacientes son cada vez más conscientes de la necesidad de un enfoque científico. Este manual reúne los problemas más comunes y los diagnósticos en el ejercicio de la medicina, con un resumen de orientación de las últimas estrategias, planes de gestión y protocolos basados en la evidencia. Organizado por materias, se centra en las necesidades del paciente y ofrece una guía inmediata en todos los aspectos del diagnóstico y tratamiento, el beneficio del ejercicio y la epidemiología. Es un manual obligatorio todos los profesionales dedicados a la medicina del deporte

CAMD/00908

25

**Plataformas vibratorias: bases neurofisiológicas, efectos**

fisiológicos y aplicaciones terapéuticas =Vibratory platforms: neurophysiological bases, physiological effects and therapeutic applications / Isabel Mª Alguacil...[et al]. -- 10 p. ; 30 cm

El objetivo de este estudio ha sido realizar una revisión de la literatura científica para determinar los efectos y aplicaciones terapéuticas de la WBV, en especial en el campo de la Medicina Física y Rehabilitación, así como sus resultados. Para ello se ha comenzado con una búsqueda bibliográfica en Pubmed.


26

**GÓMEZ LANDERO, Arturo L.**

Somatotipo y composición corporal en trampolinistas españolas de alto nivel = Somatotype and body composition in elite spanish female trampolinist / L. Arturo Gómez Landero, Mercedes Vernetta y Jesús López Bedoya. -- 12 p. ; 30 cm

Este estudio pretende describir y establecer datos de referencia en el Trampolín Español, centrándonos en el somatotipo y la composición corporal en los distintos grupos de edad competitivos de categoría femenina.

KUEHL, Robert O.
Incluye referencias bibliográficas e índices
Este libro enseña los principios del diseño de estadísticas y análisis de datos para efectuar estudios científicos comparativos. Profundiza en todos los pasos del diseño de experimentos y presenta al estudiante un punto de vista estructural. Por otro lado, a fin de proporcionar una visión amplia de todas las dimensiones de esta disciplina, los ejercicios y problemas presentan gran variedad de conjuntos de datos tomados de diferentes áreas tales como ingenierías, industria, cuestiones agrícolas e investigaciones químicas; además la mayoría de los ejemplos se basan en casos reales.
ISBN 970-686-048-7
CAMDCO/0087

NELSON, David L
Incluye Bibliografía, índice y glosario
Esta tercera edición refleja los cambios que ha experimentado la Bioquímica en estos últimos años. Hay capítulos nuevos y otros totalmente reorganizados, muchas ilustraciones nuevas, etc. Pero, aunque ha cambiado el contenido de manera extensa, la organización del libro resta fiel a un orden de presentación que ha demostrado de modo consistente su éxito en las anteriores ediciones y que resulta familiar a profesores y a estudiantes de todo el mundo. Para estudiantes de bioquímica, para licenciados que requieran una amplia introducción a la bioquímica, y para estudiantes de medicina, odontología, veterinaria y farmacia.
CAMDCO/0088

LLANA BELLOCH, Salvador
Riesgos pora la salud de la natación en piscinas cloradas(I) = Health risks of swimming in chlorinated swimming pools(I) / Salvador Llana, Manuel Zarzoso y Pedro Pérez Soriano. -- 8 p. ; 30 cm
Es necesario que el agua de las piscinas tenga un tratamiento que garantice la salubridad, pues de lo contrario, las piscinas serían una fuente de de transmisión de innumerables enfermedades.
Para lograrlo, el agua de las piscinas debe de cumplir una serie de requisitos legales que, en España, vienen regulado por las diferentes comunidades autónomas.


30

COHEN, Jacob


Incluye índice

Bibliografía: p. 553-558

Statistical Power Analysis es una guía no técnica para el análisis de la energía en la planificación de la investigación que proporciona a los usuarios de las estadísticas aplicadas las herramientas necesarias para aumentar la eficacia de los análisis.

CAMDCO/0089
31

Analisis científico de diferentes métodos de entrenamiento en fútbol sala = Scientific analysis of practice methods used in futsal / Javier Álvarez Medina...[et al]. -- 11 p. ; 30 cm

Este estudio pretende aportar datos fisiológicos a partir de diferentes sesiones basadas en el empleo de metodologías integrales y determinar si cumplen con los objetivos previstos. El examen medico-deportivo consta de: evaluación antropométrica, pruebas de esfuerzo máximo continuo y 4 sesiones de entrenamiento con diferentes objetivos condicionales. Los parámetros analizados han sido la frecuencia cardiaca, lactatemia y ergoespirométricos.


32


Este libro recoge y analiza las características del jugador de baloncesto, su análisis funcional y sus particularidades físicas. Así mismo, en un amplio capítulo trata de las lesiones más frecuentes y su tratamiento y rehabilitación. También se trata específicamente el diagnóstico diferencial de la patología del crecimiento, dada la importancia de la talla alta en este deporte.

Contiene capítulos aplicables a la Medicina de la Actividad Física en general, el entrenamiento, la preparación física, la nutrición, la psicología y otros más específicos como el jet lag, el dopaje o la evaluación de la visión, entre otros.


CAMD/00911
Psicología del deporte

33

HERNÁNDEZ ALCÁNTARA, Alfredo
Alteración de la imagen corporal en gimnastas = Female Gymnasts body image distortion / Alfredo Hernández Alcántara, Julieta Aréchiaga Viramontes y Consuelo Prado Martínez. -- 8 p. ; 30 cm
El propósito de esta investigación fue analizar el grado de alteración de la imagen corporal considerada como factor de riesgo asociado con trastornos de la conducta alimentaria en función de la variación del índice de masa corporal en gimnastas mexicanas lúdicas, artísticas y ritmicas.

Traumatología y rehabilitación

34

Lesiones deportivas : mecanismos, clínica y rehabilitación / Roberto Pastrana Pérez...[et al]. -- Málaga : Universidad de Málaga, 2007. -- 422 p. : il. ; 24 cm. -- (Manuales / Universidad de Málaga ; 82)
Incluye bibliografía e índice
El objetivo fundamental de este manual es dar un mensaje sencillo y práctico, intentando exponer los aspectos más interesantes sobre la lesión, su mecanismo de producción, los síntomas clínicos que les pueden ayudar a la evaluación y el diagnóstico, y sobre todo se ha procurado exponer los aspectos fundamentales del tratamiento rehabilitador
CMD CMGR CMGR/0028
CMD CMHU CMHU/0017
CMD CMSE CAMD/00907