WALKING TRAINING: PROGRAMMAZIONE E PROGRESSIONE NELLE DIVERSE FASCE DI ETÀ E IMPOSTAZIONE DELLA CORRETTA POSTURA DI CAMMINATA

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Libro di testo consigliato

I CONTENUTI PRESENTATI IN QUESTO CORSO *SONO APPLICABILI AD INDIVIDUI SANI, OVVERO NON AFFETTI DA CONDIZIONI PATOLOGICHE CHE POSSANO IN QUALCHE MODO INFICIARE L'APPLICAZIONE DI QUANTO PRESENTATO*.

COME DEFINERESTE LA CAMMINATA VELOCE?

ATTIVITA' DI INTENSITA' LEGGERA, MODERATA, VIGOROSA O MOLTO VIGOROSA?

DIPENDE!

DA CHE DIPENDE?

FISIOLOGIA, endocrinologia ed effetti benefici del cammino

In assenza di condizioni patologiche, l'intensità della camminata veloce dipende da:

- velocità di camminata;
- inclinazione del terreno;
- consistenza del terreno;
- stato ponderale;
- capacità cardio-circolatoria e respiratoria;
- caratteristiche neuromuscolari;
- bilanciamento delle catene muscolari;
- idratazione e stato nutrizionale dell'individuo;
- abbigliamento dell'individuo;
- caratteristiche climatiche.

FISIOLOGIA, endocrinologia ed effetti benefici del cammino

Determinanti dell'intensità della camminata veloce: velocità di camminata, inclinazione e consistenza del terreno.

PLOS | ONE

RESEARCH ARTICLE

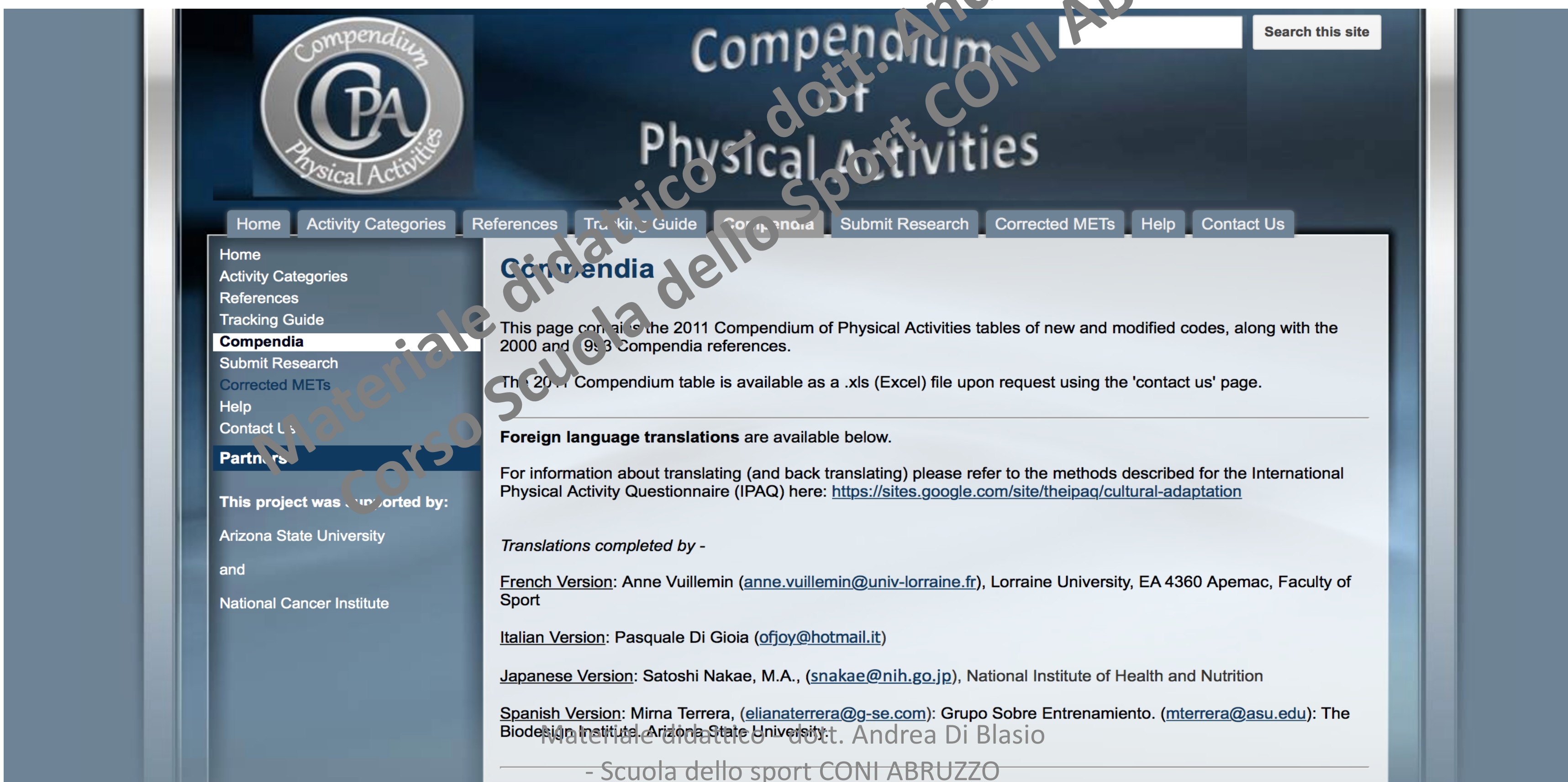
Economical Speed and Energetically Optimal Transition Speed Evaluated by Gross and Net Oxygen Cost of Transport at Different Gradients

Daijiro Abe[1]*, Yoshiyuki Fukuoka[2], Masahiro Horiuchi[3]

1 Center for Health and Sports Science, Kyushu Sangyo University, Fukuoka, Japan, 2 Faculty of Health and Sports Science, Doshisha University, Kyotanabe, Japan, 3 Division of Human Environmental Science, Mt. Fuji Research Institute, Fujiyoshida, Japan

FISIOLOGIA, endocrinologia ed effetti benefici del cammino

Determinanti dell'intensità della camminata veloce: velocità di camminata, inclinazione e consistenza del terreno.



FISIOLOGIA, endocrinologia ed effetti benefici del cammino

Med Sci Sports Exerc. 2005 Nov;37(11):1864-70.

Preferred transition speed between walking and running: effects of training status.

Rotstein A[1], Inbar O, Berginsky T, Meckel Y.

Author information

Abstract

PURPOSE: This study was conducted to identify the preferred transition speed (PTS) between walking and running and the energetically optimal transition speed (ETOS), in runners and nonrunners.

METHODS: A total of 19 young men were asked to walk on a treadmill at 5 km.h(-1). Speed was then increased by 0.2 km.h(-1) every minute. Subjects were instructed to start running at a particular speed they felt was easier. PTS for each subject was determined as the mean of the walk-run and the run-walk transitions. Subjects were also asked to walk and to run for 5 min at each of the following velocities: PTS - 1 km.h(-1), PTS - 0.5 km.h(-1), PTS, PTS + 0.5 km.h(-1), and PTS + 1 km.h(-1). This procedure was performed twice, once walking and once running, at all speeds. Physiologic measurements of oxygen consumption, heart rate, and rate of perceived exertion (RPE) were performed at each stage. EOTS was determined by plotting individual curves for each subject with the energy cost of locomotion as a function of velocity.

RESULTS: Preferred transition speed was 7.23 +/- 0.25 and 7.42 +/- 0.25 km.h(-1) for nonrunners and runners, respectively (P > 0.05), and differed significantly (F = 16.47, alpha < 0.001) from the EOTS, which was 8.02 +/- 0.84 km.h(-1) for nonrunners and 7.90 +/- 0.48 km.h(-1) for the runners. No significant differences were found between runners and nonrunners in PTS or EOTS. Running at the PTS resulted in a significantly lower RPE and higher energy cost than walking at the PTS in both groups.

CONCLUSION: This study indicates that 1) the preferred PTS is slower than the EOTS, and 2) the PTS and EOTS are not dependent on the aerobic capacity or the training status.

FISIOLOGIA, endocrinologia ed effetti benefici del cammino

Hum Mov Sci. 2012 Jun;31(3):672-82. doi: 10.1016/j.humov.2011.06.006. Epub 2011 Aug 10.

Anthropometric characteristics and gait transition speed in human locomotion.

Sentija D[1], Rakovac M, Babić V.

Author information

Abstract

The purpose of this study was to investigate the relationship between anthropometric parameters and the preferred transition speed (PTS) in human locomotion, in both genders. Previous studies exploring body measures as possible determinants of the PTS were biased toward longitudinal body dimensions, while the relationship between the PTS and transverse body dimensions has so far not been examined. Longitudinal and transverse anthropometric parameters were measured in 48 physical education students (21 males, 27 females), and an exercise test was performed for determination of the PTS. The relationship between the PTS and the anthropometric variables was determined using Pearson product-moment correlations and stepwise multiple regression analysis. Weak to moderate correlations between several body size and body shape variables and the PTS were found. In males, significant negative correlations ($p<.05$) between transverse body dimensions scaled to body height (calf girth, shoulder, bicristal and bitrochanteric diameters) and the PTS were found ($r=-.51$ to $-.63$). In females, calf girth and thigh girth scaled to height were significantly negatively correlated with the PTS ($r=-.61$ and $-.42$, respectively; $p<.05$). The results of the study suggest that gait transition speed in humans is related to both transverse and longitudinal body dimensions, and that sexual dimorphism in body size and shape should be taken into consideration for a proper interpretation of the PTS.

Stride Rate Recommendations for Moderate-Intensity Walking

DAVID A. ROWE[1,2], GREGORY J. WELK[3], DAN P. HEIL[4], MATTHEW T. MAHAR[2], CHARLES D. KEMBLE[2], M. ANDRÉS CALABRÓ[3], and KARIN CAMENISCH[4]

[1]School of Psychological Sciences and Health, University of Strathclyde, Glasgow, Scotland, UNITED KINGDOM; [2]Department of Exercise and Sport Science, East Carolina University, Greenville, NC; [3]Department of Kinesiology, Iowa State University, Ames, IA; and [4]Department of Health and Human Development, Montana State University, Bozeman, MT

ABSTRACT

ROWE, D. A., G. J. WELK, D. P. HEIL, M. T. MAHAR, C. D. KEMBLE, M. A. CALABRÓ, and K. CAMENISCH. Stride Rate Recommendations for Moderate-Intensity Walking. *Med. Sci. Sports Exerc.*, Vol. 43, No. 2, pp. 312–318, 2011. Current physical activity guidelines recommend physical activity of at least moderate intensity to gain health benefits. Previous studies have recommended a moderate-intensity walking cadence of 100 steps per minute for adults, but the influence of height or stride length has not been investigated. **Purpose**: The purpose of the current study was to determine the role of height and stride length in moderate-intensity walking cadence in adults. **Methods**: Seventy-five adults completed three treadmill walking trials and three overground walking trials at slow, medium, and fast walking speeds while $\dot{V}O_2$ was measured using indirect calorimetry. Five stride length–related variables were also measured. **Results**: Mixed model regression analysis demonstrated that height explained as much variability in walking intensity at a given cadence as did two different measures of leg length and two different stride length tests. **Conclusions**: The previous general recommendations of 100 steps per minute were supported for use where a simple public health message is needed. Depending on height, moderate-intensity walking cadence can vary by more than 20 steps per minute, from 90 to 113 steps per minute for adults 198 to 152 cm tall, respectively. Height should therefore be taken into consideration for more precise evaluation or prescription of walking cadence in adults to provide health benefits. **Key Words:** PHYSICAL ACTIVITY, PEDOMETER, PUBLIC HEALTH, STEP COUNTS, VALIDITY, GUIDELINES

Fisiologia, **ENDOCRINOLOGIA**
ed effetti benefici del cammino

IN UN INDIVIDUO SANO, ENDOCRINOLOGICAMENTE E METABOLICAMENTE PARLANDO, PER OTTIMIZZARE LA PERDITA DI GRASSO, E' MEGLIO PRATICARE UNA SEDUTA DI ALLENAMENTO DI CAMMINATA VELOCE DI BASSA INTENSITA' E LUNGA o LUNGHISSIMA DURATA, O DI INTENSITA' E DURATA INTERMEDIE?

ITALIA CONI COMITATO REGIONALE ABRUZZO

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Fisiologia, **ENDOCRINOLOGIA** ed effetti benefici del cammino

The American Journal of Clinical Nutrition

Lipid metabolism during endurance exercise[1–3]

Jeffrey F Horowitz and Samuel Klein

ABSTRACT Endogenous triacylglycerols represent an important source of fuel for endurance exercise. Triacylglycerol oxidation increases progressively during exercise; the specific rate is determined by energy requirements of working muscles, fatty acid delivery to muscle mitochondria, and the oxidation of other substrates. The catecholamine response to exercise increases lipolysis of adipose tissue triacylglycerols and, presumably, intramuscular triacylglycerols. In addition, increases in adipose tissue and muscle blood flow decrease fatty acid reesterification and facilitate the delivery of released fatty acids to skeletal muscle. Alterations in fatty acid mobilization and the relative use of adipose and intramuscular triacylglycerols during exercise depend, in large part, on degree of fitness and exercise intensity. Compared with untrained persons exercising at the same absolute intensity, persons who have undergone endurance training have greater fat oxidation during exercise without increased lipolysis. Available evidence suggests that the training-induced increase in fat oxidation is due primarily to increased oxidation of non-plasma-derived fatty acids, perhaps from intramuscular triacylglycerol stores. Fat oxidation is lower in high-intensity exercise than in moderate-intensity exercise, in part because of decreased fatty acid delivery to exercising muscles. Parenteral lipid supplementation during high-intensity exercise increases fat oxidation, but the effect of ingesting long-chain or medium-chain triacylglycerols on substrate metabolism during exercise is less clear. This review discusses the relation between fatty acid mobilization and oxidation during exercise and the effect of endurance training, exercise intensity, and lipid supplementation on these responses. *Am J Clin Nutr* 2000;72(suppl):558S–63S.

plasma and the delivery o
cle mitochondria for oxid
relation between fatty aci
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LIPID KINETICS DUR

After an overnight fast
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and those that inhibit
insulin), which hydroly
glycerol. At rest, the amo
tissue typically exceeds
appearance into plasma (
fatty acid oxidation (2).
liberated by lipolysis
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Mild- or moderate-inte
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increase in fat oxidation
increased energy requiren
availability. A large porti
is provided by lipolysis
increases 2–3-fold (4, 5) a
stimulation (6, 7). In ad
acids that are reesterifie

Fisiologia, **ENDOCRINOLOGIA** ed effetti benefici del cammino

1 h di esercizio fisico aerobico eseguito al 50% del VO_2max ed eseguito per 3 volte la settimana per 1 anno determina una spesa energetica post-esercizio di 2.800 kcal/year, circa 311 g di grasso.

1 h di esercizio fisico aerobico eseguito ad intensità > 70% del VO_2max, per 3 volte la settimana per 1 anno, determina una spesa energetica post-esercizio di 26.000 kcal/year, circa 2.9 kg di grasso.

Constantini N, Hackney AC. Endocrinology of physical activity and sport. Second edition. New York, USA: Springer, 2013.

WALKING TRAINING: PROGRAMMAZIONE E PROGRESSIONE NELLE DIVERSE FASCE DI ETÀ E IMPOSTAZIONE DELLA CORRETTA POSTURA DI CAMMINATA

Tudor-Locke *et al. International Journal of Behavioral Nutrition and Physical Activity* 2011, 8:78
http://www.ijbnpa.org/content/8/1/78

INTERNATIONAL JOURNAL OF BEHAVIORAL NUTRITION AND PHYSICAL ACTIVITY

REVIEW Open Access

How Many Steps/Day are Enough? for Children and Adolescents

Catrine Tudor-Locke[1,2*], Cora L Craig[2,3], Michael W Beets[4], Sarahjane Belton[5], Greet M Cardon[6], Scott Duncan[7], Yoshiro Hatano[8], David R Lubans[9], Timothy S Olds[10], Anders Raustorp[11,12], David A Rowe[13], John C Spence[14], Shigeho Tanaka[15] and Steven N Blair[16]

How Many Steps/day are Enough? For Adults

Catrine Tudor-Locke[1,2*], Cora L Craig[2,3], Wendy J Brown[4], Stacy A Clemes[5], Katrien De Cocker[6], Billie Giles-Corti[7], Yoshiro Hatano[8], Shigeru Inoue[9], Sandra M Matsudo[10], Nanette Mutrie[11], Jean-Michel Oppert[12], David A Rowe[11], Michael D Schmidt[13,14], Grant M Schofield[15], John C Spence[16], Pedro J Teixeira[17], Mark A Tully[18] and Steven N Blair[19]

How many steps/day are enough? For older adults and special populations

Catrine Tudor-Locke[1,2*], Cora L Craig[2,3], Yukitoshi Aoyagi[4], Rhonda C Bell[5], Karen A Croteau[6], Ilse De Bourdeaudhuij[7], Ben Ewald[8], Andrew W Gardner[9], Yoshiro Hatano[10], Lesley D Lutes[11], Sandra M Matsudo[12,13], Farah A Ramirez-Marrero[14], Laura Q Rogers[15], David A Rowe[16], Michael D Schmidt[17,18], Mark A Tully[19] and Steven N Blair[20]

EXPERIMENTAL DATA

MOVEMENT PATTERN AND CHARACTERISTICS DURING LIFESPAN: COMPARISON AMONG CHILDREN, ADULTS AND ELDERLY PEOPLE ACCORDING TO PONDERAL CONDITION

PARTICIPANTS
N=381

CHILDREN (6-10 yrs) n=100	MIDDLE-AGED ADULTS (35-54 yrs) n=134	OLD ADULTS (55-70 yrs) n=147
• Normal-weight (n=26)	• Normal-weight (n=46)	• Normal-weight (n=32)
• Overweight (n=28)	• Overweight (n=40)	• Overweight (n=73)
• Obese (n=46)	• Obese (n=48)	• Obese (n=42)

Sport Sci Health
DOI 10.1007/s11332-016-0315-8

CrossMark

ORIGINAL ARTICLE

Analysis of female physical activity characteristics according to age and ponderal status in a free-living context: a study from a central Italy sample

Andrea Di Blasio[1] · Giorgio Napolitano[1] · Francesco Di Donato[2] · Pascal Izzicupo[3] · Angela Di Baldassarre[3] · Elisabetta Modestini[2] · Marco Bergamin[4] · Valentina Bullo[4] · Ines Bucci[1] · Mario Di Pietro[2]

GENERAL CONCLUSIONS ACCORDING TO OUR DATA…

- DAILY STEPS, LIGHT and MODERATE INTENSITY PHYSICAL ACTIVITIES don't allow to predict PONDERAL CONDITION in CHILDREN.
- CHILDREN, independently from PONDERAL CONDITION, have higher amount of DAILY MODERATE INTENSITY PHYSICAL ACTIVITIES than OVERWEIGHT and OBESE ADULTS

GENERAL CONCLUSIONS ACCORDING TO OUR DATA…

- DAILY VIGOROUS and VERY VIGOROUS PHYSICAL ACTIVITIES allow to predict PONDERAL CONDITION in CHILDREN

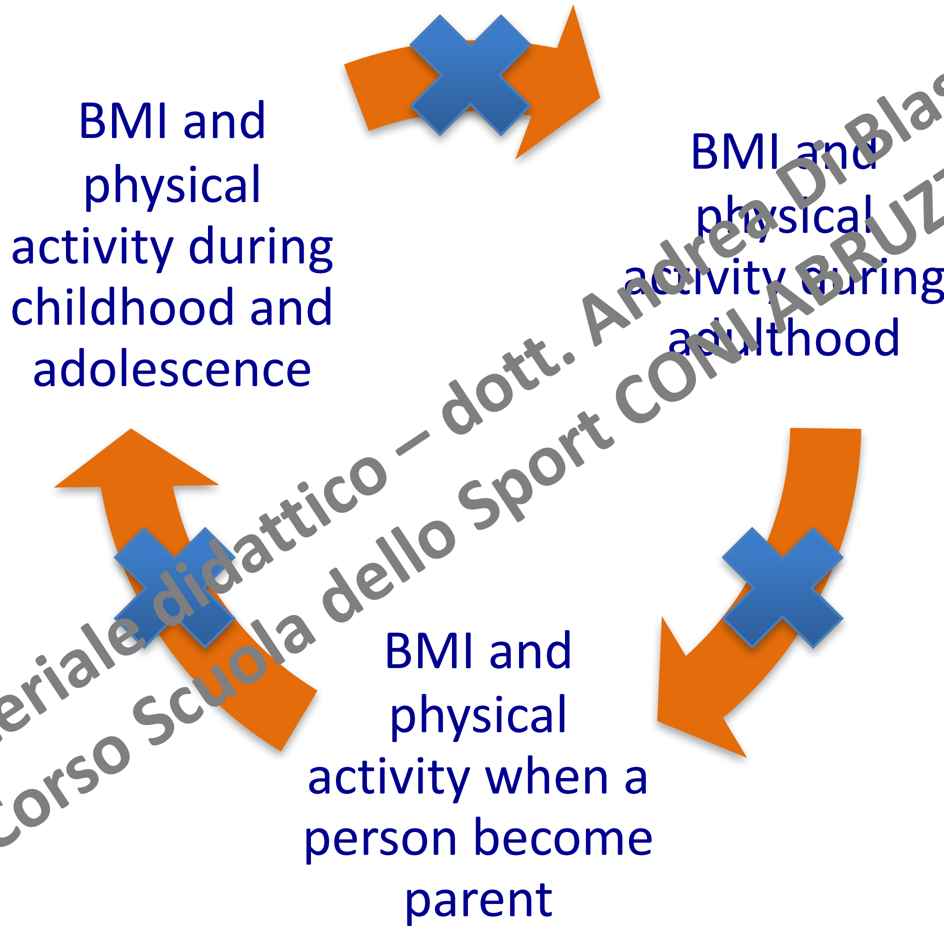
TO PROGRAM AND REALIZE PROPER AND EFFECTIVE INTERVENTIONS IN PHYSICAL ACTIVITY PROMOTION, IT IS IMPORTANT TO REMEMBER, TOGETHER WITH OUR RESULTS, THAT…

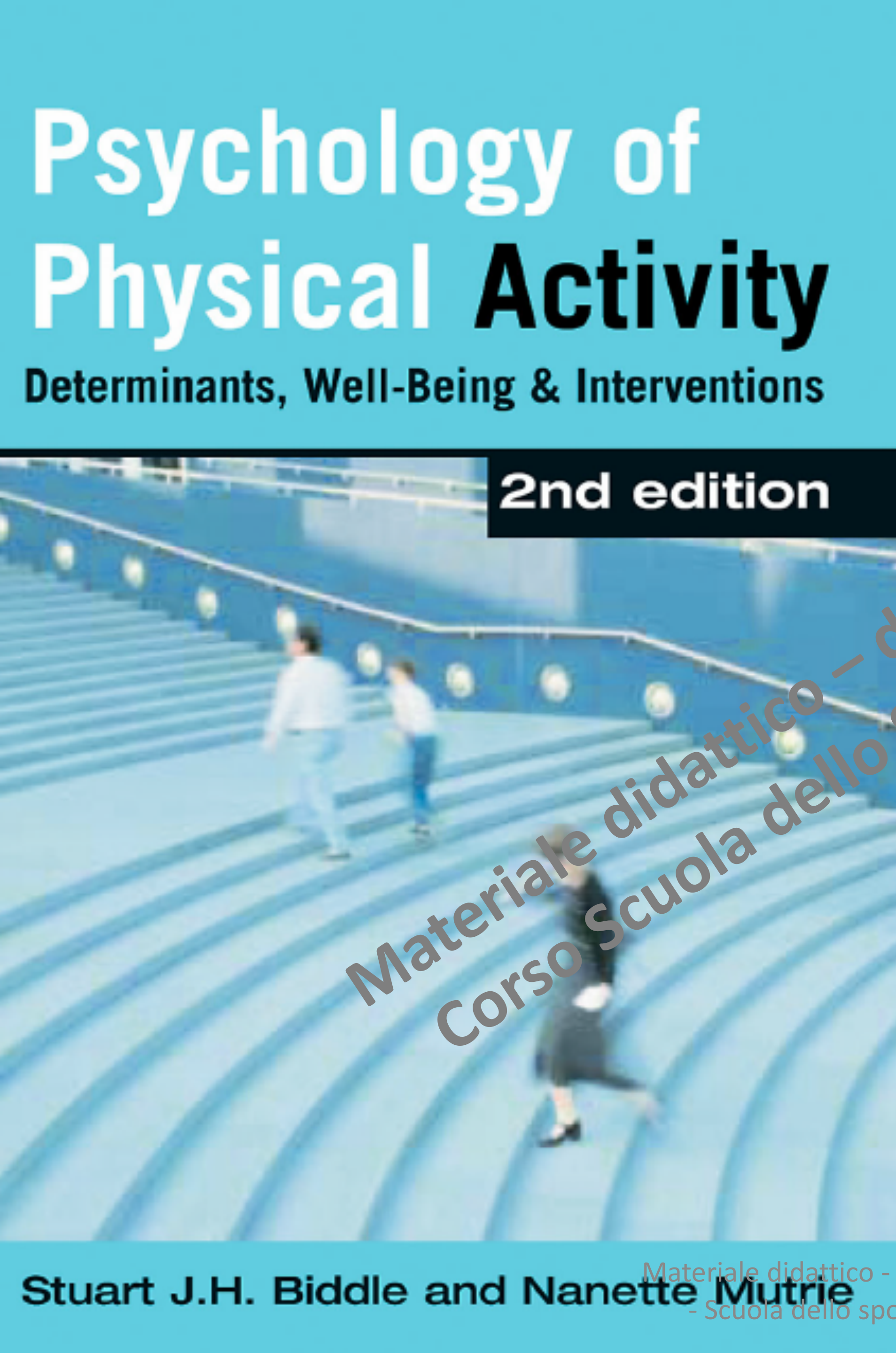
… EVEN IF…

Gruber and Haldeman (2009)

"… family is the unit of health promotion intervention …"

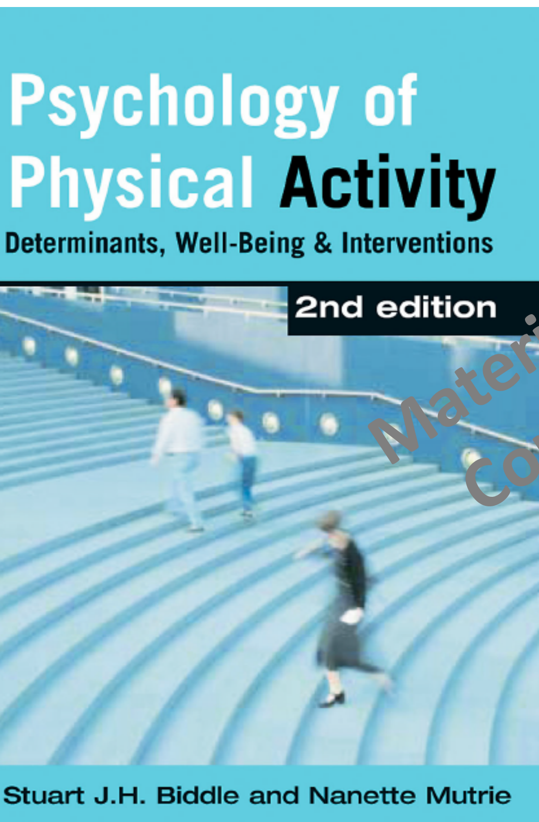
Gruber KJ, Haldeman LA. Using the family to combat childhood and adult obesity. Public health research practice and policy 2009; 6(3):1-10


BMI and physical activity during childhood and adolescence
BMI and physical activity during adulthood
BMI and physical activity when a person become parent


Psychology of Physical Activity
Determinants, Well-Being & Interventions
2nd edition
Stuart J.H. Biddle and Nanette Mutrie

…

… CHILDREN ARE NOT "LITTLE ADULTS", BOTH FOR PHYSIOLOGICAL and PSYCHOLOGICAL REASONS…



A study of over 15,000 people from fifteen countries in the European Union found that the most frequently given reason for physical activity participation was to maintain good health, whereas socialisation and weight control were less likely to be endorsed (see results for the EU alongside the UK in Figure 2.1).

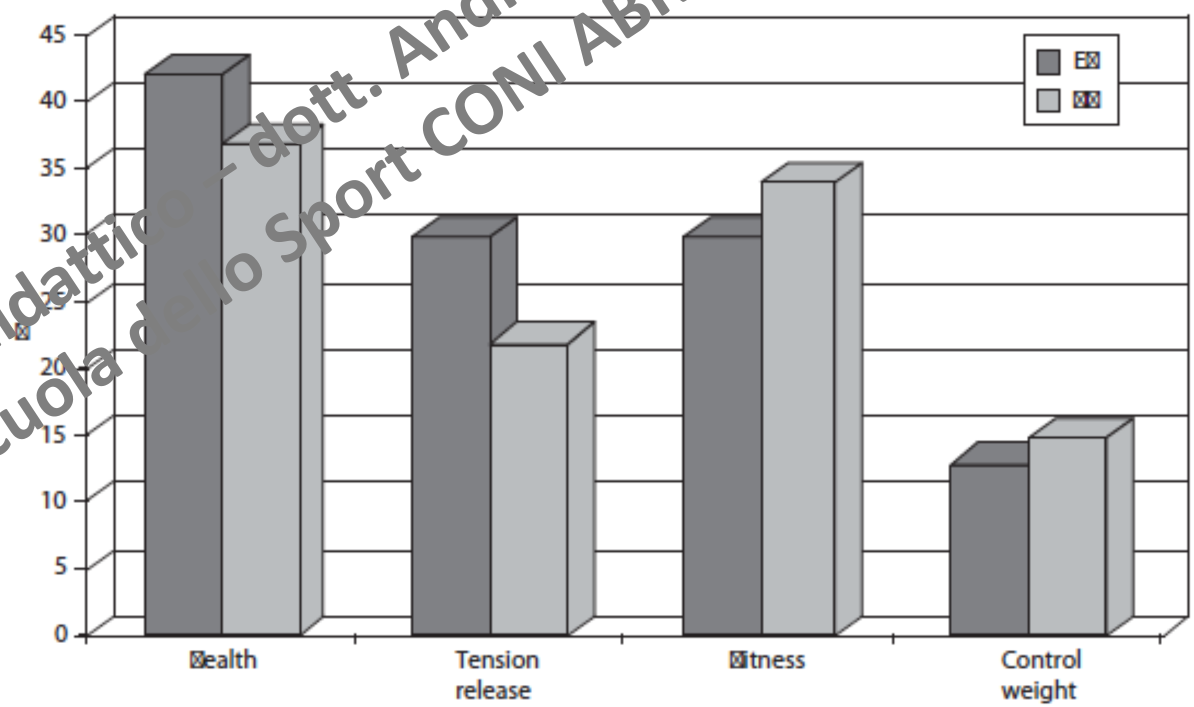


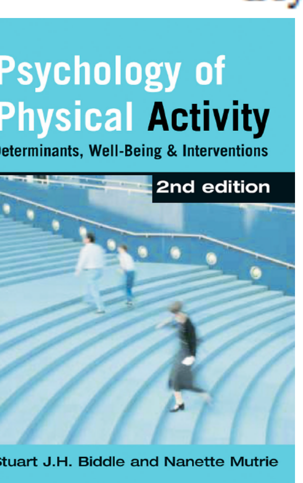
Figure 2.1 Responses (percentage of people) concerning selected motivating factors for participation from the EU (an average of fifteen countries, including the UK) and the UK (Zunft *et al.* 1999)

...

Motives for participation

Interviews with young people and their parents in England (Mulvihill, Rivers and Aggleton 2000) have shown that children aged 5–11 years are often physically active and are enthusiastic about activity. They are motivated by enjoyment and social elements of participation, while for those aged 11–15 years, enjoyment was important, itself enhanced when an element of choice was evident, and feelings of well-being. Motives for weight control started to emerge in girls at this age.

Research in Finland (Telama and Silvennoinen 1979) of over 3,000 11–19 year olds showed clear changes in motivation for physical activity as a function of age and gender. Boys and younger adolescents were more interested in achieving success in competition but



… THEREFORE…

… BUT ENJOYABLE-REWARDING-INCLUSIVE INTERVALLED PHYSICAL ACTIVITIES, ALTERNATING BOUTS OF VIGOROUS AND VERY VIGOROUS PHYSICAL ACTIVITIES TO LIGHT TO MODERATE INTENSITY MOMENTS…

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I benefici del CAMMINARE

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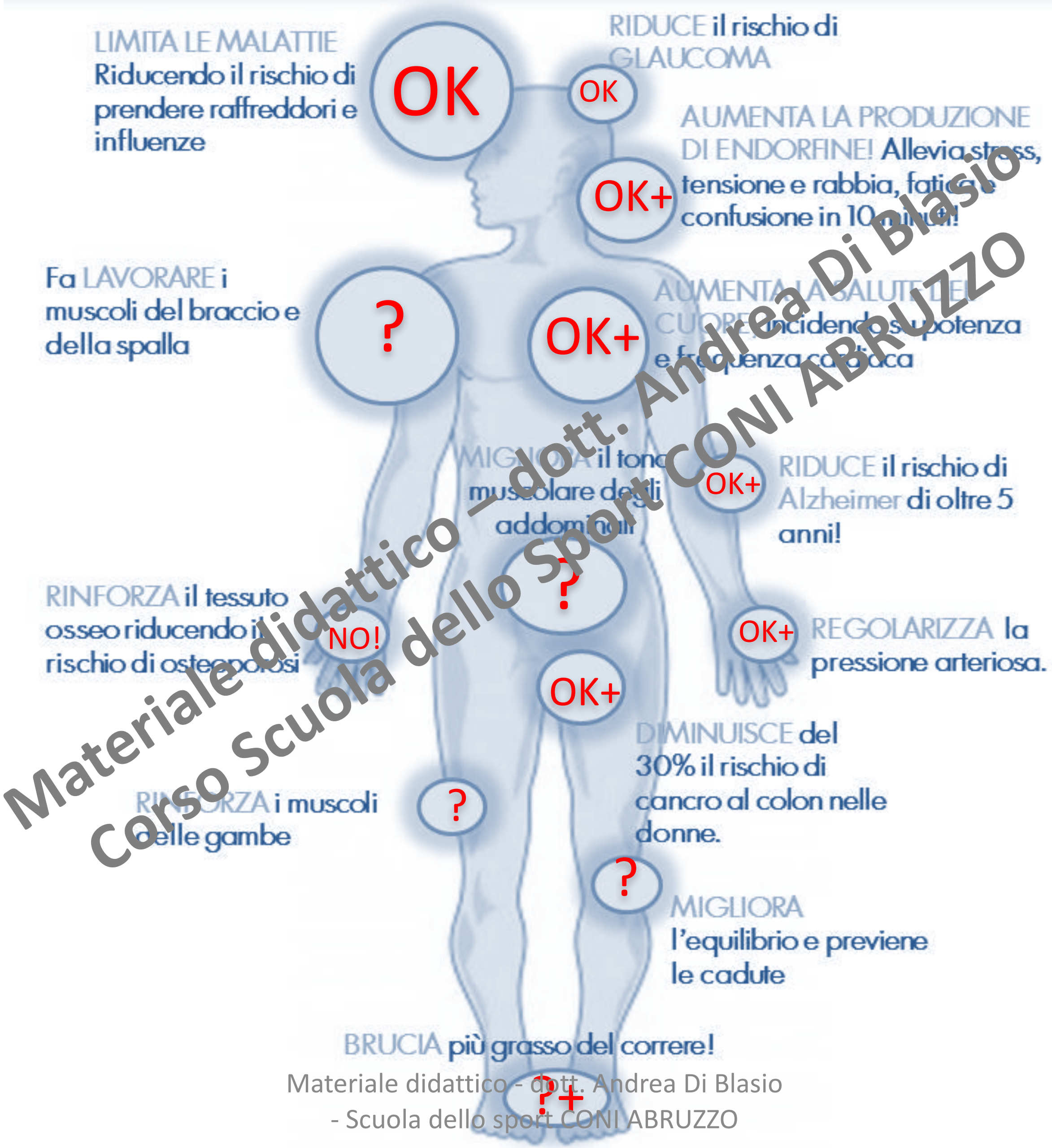

Immagine tratta da internet

frontiers in
ENDOCRINOLOGY

HYPOTHESIS AND THEORY ARTICLE
published: 03 March 2014
doi: 10.3389/fendo.2014.00020

Physical activity and bone: may the force be with you

Jonathan H. Tobias[1]*, Virginia Gould[1], Luke Brunton[1], Kevin Deere[1], Joern Rittweger[2], Matthijs Lipperts[3] and Bernd Grimm[3]

[1] *Musculoskeletal Research Unit, University of Bristol School of Clinical Sciences, Avon Orthopaedic Centre, Southmead Hospital, Bristol, UK*
[2] *German Aerospace Center, Institute of Aerospace Medicine, Cologne, Germany*
[3] *Atrium Medical Centre, AHORSE Foundation, Heerlen, Netherlands*

Edited by:
Mark Stuart Cooper, University of Birmingham, UK

Reviewed by:
Mark Stuart Cooper, University of Birmingham, UK
Nicola Jane Crabtree, Birmingham Children's Hospital NHS Foundation Trust, UK

Physical activity (PA) is thought to play an important role in preventing bone loss and osteoporosis in older people. However, the type of activity that is most effective in this regard remains unclear. Objectively measured PA using accelerometers is an accurate method for studying relationships between PA and bone and other outcomes. We recently used this approach in the Avon Longitudinal Study of Parents and Children (ALSPAC) to examine relationships between levels of vertical impacts associated with PA and hip bone mineral density (BMD). Interestingly, vertical impacts >4g, though rare, largely accounted for the relationship between habitual levels of PA and BMD in adolescents. However, in a subsequent pilot study where we used the same method to record PA levels in older people, no >4g impacts were observed. Therefore, to the extent that vertical impacts need to exceed a certain threshold in order to be bone protective, such a threshold is likely to be considerably lower in older people as compared with adolescents. Further studies aimed at identifying such a threshold in older people are planned, to provide a basis for selecting exercise regimes in older people which are most likely to be bone protective.

Keywords: impact loading, bone, physical activity, BMD, exercise

Osteoporos Int (2006) 17: 455–463
DOI 10.1007/s00198-005-0005-x

ORIGINAL ARTICLE

Intensity of exercise is associated with bone density change in premenopausal women

A. Vainionpää · R. Korpelainen · E. Vihriälä ·
A. Rinta–Paavola · J. Leppäluoto · T. Jämsä

Physical exercise and osteoporosis: effects of different types of exercises on bone and physical function of postmenopausal women

Exercício físico e osteoporose: efeitos de diferentes tipos de exercícios sobre o osso e a função física de mulheres pós-menopausadas

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Linda Denise Fernandes Moreira[1], Mônica Longo de Oliveira[1], Ana Paula Lirani-Galvão[1], Rosângela Villa Marin-Mio[1], Rodrigo Nolasco dos Santos[1], Marise Lazaretti-Castro[1]

I TEST DEL CAMMINO PER LA STIMA DELLA FITNESS AEROBICA

I TEST DEL CAMMINO PER LA STIMA DELLA FITNESS AEROBICA

IN ASSENZA DI CONDIZIONI PATOLOGICHE, il *ROCKPORT FITNESS WALKING TEST*, o test del miglio, viene usato per stimare la fitness aerobica degli adulti in salute.

I TEST DEL CAMMINO PER LA STIMA DELLA FITNESS AEROBICA IL ROCKPORT FITNESS WALKING TEST

Il compito che il controllore fornisce all'esecutore è di percorrere 1 miglio, camminando, nel minor tempo possibile. Il materiale necessario per l'esecuzione del test è ***un percorso pianeggiante della lunghezza di un miglio***, un ***cardiofrequenzimetro*** ed un ***cronometro***.

Al momento del via, il misuratore fa partire il cronometro e l'esecutore comincia a camminare. ***Al raggiungimento del miglio, l'esecutore si ferma ed il misuratore stoppa il tempo, registrandolo, unitamente alla sua frequenza cardiaca (FC).***

I TEST DEL CAMMINO PER LA STIMA DELLA FITNESS AEROBICA IL ROCKPORT FITNESS WALKING TEST

La stima del VO_2max avviene mediante l'utilizzo delle seguenti formule

VO_2max uomini = 139.168 - (0.388 x età) - (0.077 x peso x 2.2046) - (3.265 x tempo di percorrenza) - (0.156 x FC) + 6.318.

VO_2max donne = 139.168 - (0.388 x età) - (0.077 x peso x 2.2046) - (3.265 x tempo di percorrenza) - (0.156 x FC).

Nota: *età, espressa in anni; peso, espresso in kg; tempo di percorrenza espresso in minuti, centesimi di minuto; FC, battiti al minuto.*

Per il calcolo automatico. www.brianmac.co.uk/rockport.htm

I TEST DEL CAMMINO PER LA STIMA DELLA FITNESS AEROBICA IL ROCKPORT FITNESS WALKING TEST

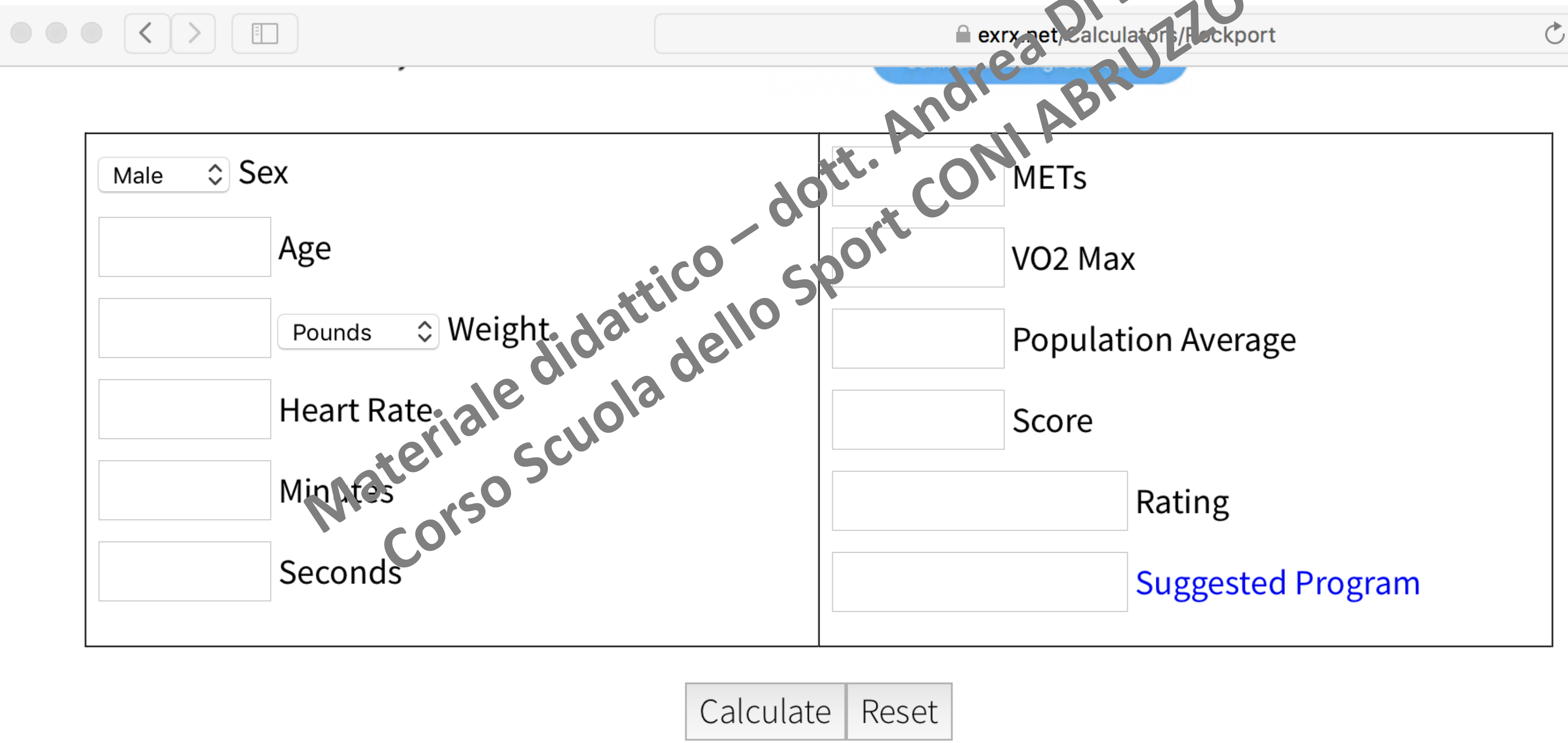
VO_2 max Calculator

For an estimate of your VO_2 max enter your gender, age, weight, heart rate at the end of the test, the time to complete the walk and then select the 'Calculate' button.

Gender	Male	Age	years	Heart Rate	bpm
Weight	kgs	Time	Mins	secs	
Calculate		VO_2 max	mls/kg/min		

For an analysis of your VO_2 max score see the VO_2 max page.

I TEST DEL CAMMINO PER LA STIMA DELLA FITNESS AEROBICA IL ROCKPORT FITNESS WALKING TEST



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I TEST DEL CAMMINO PER LA STIMA DELLA FITNESS AEROBICA IL ROCKPORT FITNESS WALKING TEST

exrx.net/Calculators/Rockport

Male	Sex	7.09267571	METs
64	Age	24.8243650	VO2 Max
82	Kilograms Weight	33.94	Population Average
134	Heart Rate	7	Score
16	Minutes	Poor	Rating
45	Seconds	Blue	Suggested Program

Calculate Reset

I TEST DEL CAMMINO PER LA STIMA DELLA FITNESS AEROBICA IL ROCKPORT FITNESS WALKING TEST

ExRx.net > Aerobic Conditioning > Programs

Seleziona lingua ▼

Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Miles	1	1.25	1.25	1.5	1.5	1.5	1.75	1.75	2	2	2	2.25	2.25	2.5	2.5	2.5	2.75	2.75	3	3
MPH	3	3	3.25	3.25	3.25	3.5	3.5	3.5	3.5	3.75	3.75	3.75	3.75	3.75	4	4	4	4	4	4
Kilometers	1.6	2	2	2.4	2.4	2.4	2.8	2.8	3.2	3.2	3.2	3.6	3.6	4	4	4	4.4	4.4	4.8	4.8
KMPH	4.8	4.8	5.2	5.2	5.2	5.6	5.6	5.6	5.6	6	6	6	6	6	6.5	6.5	6.5	6.5	6.5	6.5
HR(%max)	60	60	60	60	60	65	65	65	65	70	70	70	70	70	75	75	75	75	75	75

At the end of 20 week walking program, retest to establish new program.