

Interdisciplinary approach in Paralympic Athletics: crossroads between experience and Science in evaluation and training monitoring

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Agenda

- ❖ Road to Rio 2016
- ❖ Sport Performance's Service in Brazil
- ❖ Sport Science and Performance



Performance

Athlete

with

Disability

Paralympic Cycles

Sport
Environment



ACADEMIA
PARALÍMPICA BRASILEIRA





Road to Rio 2016

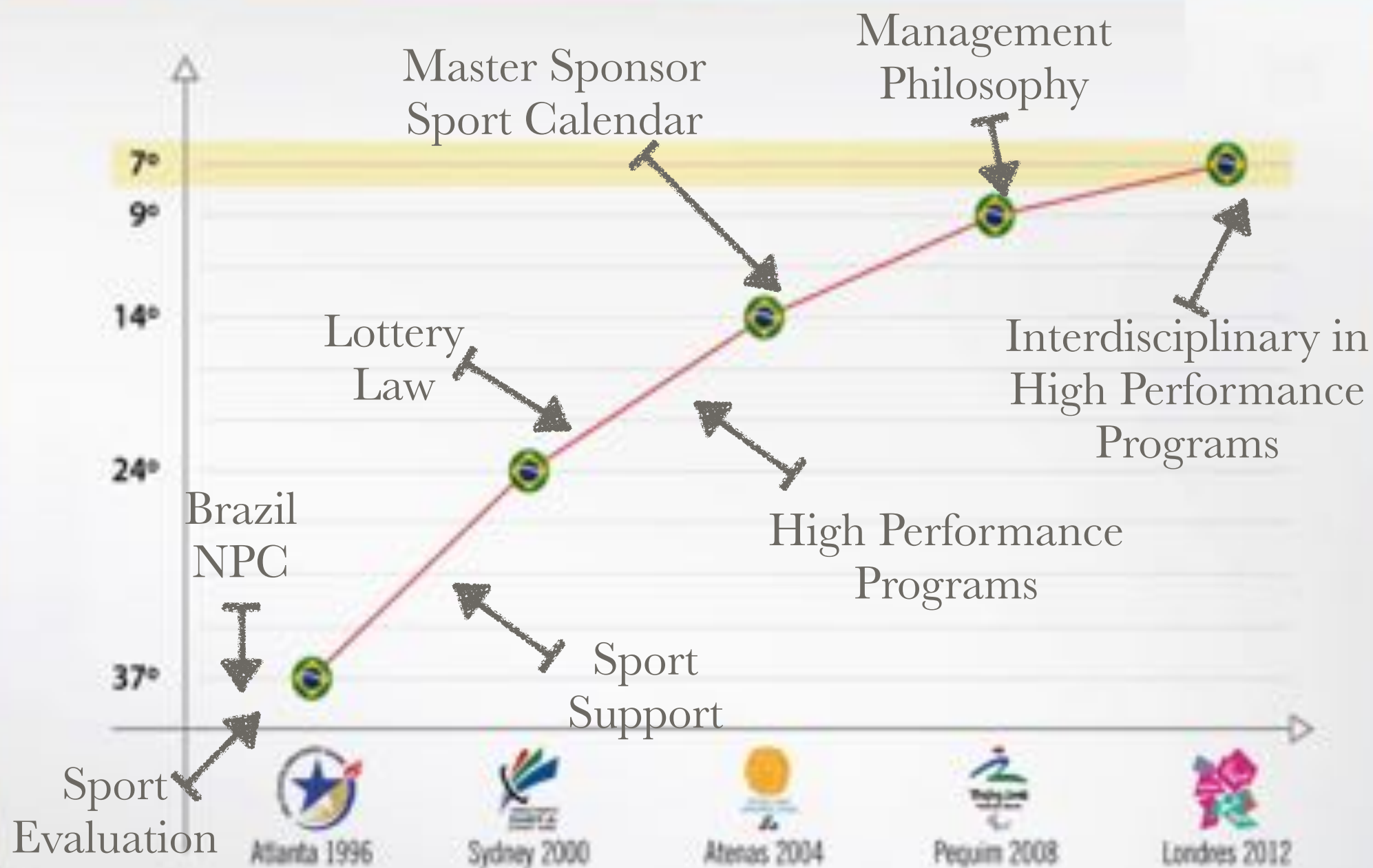
Road to Atlanta 1996

Road to London 2012

Road to Sidney 2000

Road to Beijing 2008

Road to Athens 2004



Fonte: Departamento Técnico - CPB

ARTIGO
ORIGINAL

Avaliação clínica dos atletas paraolímpicos

Roberto Vital¹, Marcelo Bichels Leitão², Marco Túlio De Mello³ e Sergio Tufik⁴

RESUMO

O objetivo deste trabalho foi verificar de modo amplo o comportamento de variáveis importantes para a saúde preventiva e o desempenho dos atletas paraolímpicos. Os paratletas foram avaliados clinicamente (aplicação de questionário, história clínica, exame físico) e com exames laboratoriais, raio x simples de tórax e controle de *doping*. A equipe brasileira que participou dos Jogos Paraolímpicos de Sydney 2000 foi também classificada de acordo com as seguintes variáveis: sexo, idade, modalidades esportivas, meios de locomoção, tipos de deficiência, resultados dos exames laboratoriais e de tórax, avaliação odontológica e controle de *doping*. Os resultados obtidos serviram de parâmetro para se traçar um perfil dos atletas e orientá-los na prevenção das doenças e lesões esportivas que pudessem interferir nos treinamentos e competições.

Palavras-chave: Deficientes. Avaliação pré-participação. Avaliação multidisciplinar. Medicina esportiva. Reabilitação. *Doping*.

ARTIGO
ORIGINAL

Avaliação biomecânica de atletas paraolímpicos brasileiros

Sílvio Soares dos Santos¹ e Fernando José de Sá Pereira Guimarães²

RESUMO

A biomecânica do esporte é uma disciplina científica da qual os movimentos desportivos são descritos e explicados à luz de conceitos e métodos mecânicos¹. De acordo com a área de aplicação a biomecânica pode ser subdividida em biomecânica do rendimento, biomecânica antropométrica e biomecânica preventiva. A biomecânica do rendimento está diretamente relacionada à análise da técnica do movimento, cujas funções são a identificação e avaliação das variáveis de influência e o diagnóstico individual em relação às falhas técnico-motoras registradas no movimento². A biomecânica utiliza como métodos de medição de seus parâmetros quantitativos a cinemetria, a eletromiografia, a dinamometria e a antropometria^{3,4}. O objetivo desse trabalho foi fazer análises quantitativa e qualitativa de parâmetros biomecânicos de provas de atletismo e natação, utilizando a cinemetria. Os resultados mostraram imperfeições na condução da técnica dos movimentos, em especial, das disciplinas de arremessos no atletismo e na natação. Tais resultados serviram como subsídios para os treinadores adaptarem e modificarem seus treinamentos no sentido de corrigir tais imperfeições.

Palavras-chave: Biomecânica. Esporte paraolímpico. Cinemática. Análise qualitativa. Análise quantitativa.

ARTIGO
ORIGINAL

Avaliação isocinética em atletas paraolímpicos

Antônio Carlos Silva¹ e Marília dos Santos Andrade²

RESUMO

O equilíbrio dos parâmetros de força muscular nas articulações é de grande relevância, tanto no aspecto clínico como para o desempenho atlético. Informações sobre os valores desses parâmetros em atletas olímpicos e principalmente nos paraolímpicos são raras. Neste trabalho apresentamos os resultados da avaliação muscular isocinética (*Cybox 6000*) realizada na equipe brasileira que participou dos Jogos Paraolímpicos de Sidney 2000. Foram avaliados os músculos flexores e extensores dos joelhos de 11 jogadores de futebol (paralisia cerebral, idade $24,6 \pm 4,8$ anos; peso $67 \pm 5,5$ kg; altura $177,7 \pm 3,8$ cm) e 12 de basquetebol (deficientes mentais, idade $24,7 \pm 4,4$ anos; peso $76,6 \pm 13,4$ kg; altura $184,4 \pm 10$ cm), e os músculos rotadores internos e rotadores externos de ombros de seis judocas (deficientes visuais, idade $29,8 \pm 5,6$ anos; peso $87 \pm 21,6$ kg; altura $171,5 \pm 6,9$ cm). Os jogadores de futebol apresentaram relação de equilíbrio muscular entre flexores e extensores de joelhos dentro dos parâmetros de normalidade apesar da fraqueza muscular imposta pela paralisia cerebral. Nos judocas o equilíbrio muscular entre

ABSTRACT

Isokinetic evaluation

The balance of the joints is of great importance, both from the clinical point of view and for athletic performance. Information about the values of these parameters in Olympic athletes and, mainly, in Paralympic athletes is rare. In this work we present the results of the isokinetic muscle evaluation (Cybox 6000) performed in the Brazilian team that participated in the 2000 Sydney Paralympic Games. We evaluated the knee flexors and extensors of 11 soccer players (cerebral palsy, age 24.6 ± 4.8 years; weight 67 ± 5.5 kg; height 177.7 ± 3.8 cm) and 12 basketball players (mentally handicapped, age 24.7 ± 4.4 years; weight 76.6 ± 13.4 kg; height 184.4 ± 10 cm), and the internal and external shoulder rotators of six judo athletes (visually handicapped, age 29.8 ± 5.6 years; weight 87 ± 21.6 kg; height 171.5 ± 6.9 cm). The soccer players showed a relationship of muscle balance between knee flexors and extensors within the parameters of normality despite the muscle weakness imposed by cerebral palsy. In the judo athletes the muscle balance between

ARTIGO
ORIGINAL

Perfil eletrocardiográfico dos atletas integrantes da equipe brasileira dos XI Jogos Paraolímpicos de Sydney 2000

Marcelo Bichels Leitão¹

RESUMO

O esporte paraolímpico tem despertado o interesse da comunidade científica devido à diversidade de situações encontradas em seus atletas. Contudo, existe atualmente uma carência de informações sobre parâmetros clínicos e fisiológicos referentes a atletas portadores de deficiências. Este trabalho tem como objetivo descrever as características eletrocardiográficas encontradas nos atletas da delegação brasileira que participou dos XI Jogos Paraolímpicos de Sydney 2000. Foram avaliados 60 atletas, sendo 50 do sexo masculino e 10 do sexo feminino. Todos estes atletas foram submetidos a uma anamnese e a um exame físico, seguidos de eletrocardiograma de repouso (ECG), teste ergométrico (TE) e quando necessário de ecocardiograma (ECOC). De acordo com os resultados do ECG os indivíduos foram classificados em uma de três situações: ECG normal (N = 31), ECG de Atleta (N = 26) ou ECG anormal (N = 3). Não foram observados eventos anormais no TE de nenhum atleta. Os três indivíduos que apresentaram ECG anormal foram submetidos a ECOC que se mostrou normal em todas as situações.

Palavras-chave: Eletrocardiograma. Atleta. Teste ergométrico. Pa-

uations found in such athletes. However, there still is a lack of information about clinical and physiological parameters of disabled athletes. This study describes the electrocardiographic characteristics observed in the athletes of the Brazilian team that participated in the XI Paralympic Games of Sydney 2000.

ARTIGO
ORIGINAL

Determinação do limiar anaeróbico em jogadores de futebol com paralisia cerebral e nadadores participantes da Paraolimpíada de Sidney 2000

Benedito Sérgio Denadai¹

RESUMO

Os objetivos desse estudo foram: a) determinar o limiar anaeróbico (LAn) em jogadores de futebol com paralisia cerebral e nadadores participantes da Paraolimpíada de Sydney 2000 e; b) analisar o comportamento do LAn em função das classes dos paratletas. Participaram do estudo, 28 atletas portadores de deficiência, sendo 11 jogadores de futebol com paralisia cerebral (classes: F36, F37 e F38) e 7 nadadores (14 homens e três mulheres) (classes: S1 a S10 e B1). Nos jogadores de futebol, o LAn foi determinado em um protocolo progressivo e intermitente na esteira rolante. O LAn foi identificado como sendo a velocidade correspondente a 3,5mM de lactato sanguíneo. Na natação o LAn foi determinado por um protocolo incremental e intermitente de 3 x 200m. Após cada tiro houve coleta de sangue para lactato. O limiar foi calculado a velocidade

deficiência. Com base nos resultados obtidos, podemos concluir que a classe (e portanto o nível de deficiência) interfere na capacidade funcional aeróbia dos paratletas. Entretanto, a resposta de lactato ao exercício submáximo é semelhante entre as classes e também aos atletas não portadores de deficiência, sugerindo a validade do LAn para a avaliação aeróbia dos nadadores e dos jogadores de futebol com paralisia cerebral.

Palavras-chave: Limiar anaeróbico. Natação. Futebol. Paratleta.

ABSTRACT

Determination of the anaerobic threshold in soccer players with cerebral palsy and swimmers participant in the Sydney 2000 Paralympic Games



Interdisciplinary
Process

1996

Evaluation and support for Coaches and Athletes

2001

National Permanent Team

2005

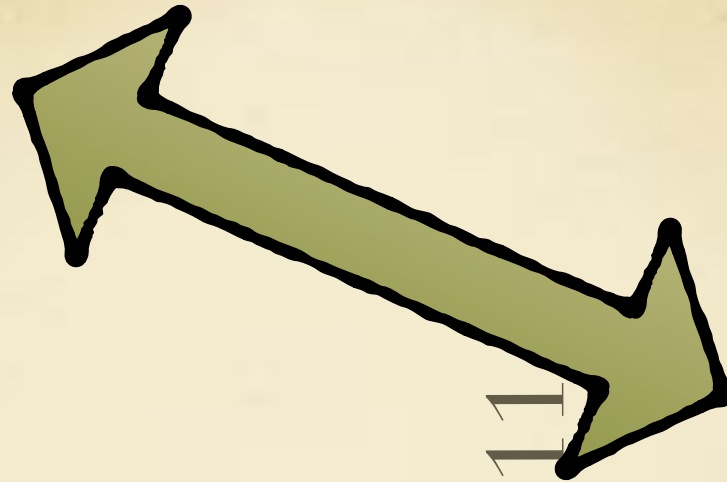
Multidisciplinary Team
by Sport

2011

Youth National
Permanent Team

2013

Training
Center



High Performance Programs

National Permanent Team

Season

Youth Team 3 times

Training Center



Training Campings and Evaluations in a Season

	ECG	Clinical	BC	ISO	Power	Jump	Psyco	70 mts	Balance	300 mts	3000 mts	Throwing Medicine ball	VO2	FMS	Mobility	Technical
Dec	X	X	X	X	X	X	Full	X	X	X	X	X	X	X	X	X
Feb		X	X		X	X	X	X		X	X	X			X	X
Apr		X	X		X	X	X	X		X	X	X	X		X	X
Jun		X	X		X	X	X	X		X	X	X			X	X
Aug		X	X		X	X	X	X		X	X	X			X	X

Sports Injuries in Paralympic Track and Field Athletes with Visual Impairment

MARILIA PASSOS MAGNO E SILVA¹, CIRO WINCKLER², ANSELMO ATHAYDE COSTA E SILVA¹, JAMES BILZON³, and EDISON DUARTE¹

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ABSTRACT

MAGNO E SILVA, M. P., C. WINCKLER, A. A. COSTA E SILVA, J. BILZON, and E. DUARTE. Sports Injuries in Paralympic Track and Field Athletes with Visual Impairment. *Med. Sci. Sports Exerc.*, Vol. 45, No. 5, pp. 908–913, 2013. **Purpose:** The aims of this study were to determine the epidemiology, nature, and pattern of sports injuries in Brazilian Paralympic track and field athletes with visual impairment and to assess differences between visual classes and sex. **Methods:** Forty visually impaired elite Paralympic athletes participated in this study (28 males and 12 females). All athletes competed in International Paralympic competitions between 2004 and 2008. According to the visual classification, 14 athletes were T/F11, 15 were T/F12, and 11 were T/F13. A standardized report form was used to collect injury data during five competitions. **Results:** Thirty-one athletes reported 77 sports injuries, with a prevalence of 78%, a clinical incidence of 1.93 injuries per athlete, and an incidence rate of 0.39 injuries per athlete per competition. Overuse injuries accounted for 82% and traumatic injuries 18% ($P < 0.05$). Small variations in the prevalence and clinical incidence of injury between sexes and visual classes were observed, but these were not statistically different ($P > 0.05$). The highest distribution of injury was in the lower limbs (87%), followed by spine (12%) and upper limbs (1%). The body regions most affected were the thighs (33.8%), lower legs (16.9%), and knees (9.1%). The most frequent diagnoses were spasms (26%), tendinopathies (23.4%), and strains (13%). **Conclusions:** Elite visually impaired track and field Paralympic athletes present a pattern of overuse injuries predominantly affecting the lower limbs, particularly the thighs, lower legs, and knees. These injuries are associated with tendinopathies, muscle spasms, and strains. There were no apparent differences in injury characteristics between visual classes or sex. **Key Words:** ATHLETICS, DISABILITY SPORT, INJURY EPIDEMIOLOGY, PARALYMPICS

Athletics was one of only eight sports included in the first Paralympic Games, held in Rome, in 1960. In this first Paralympiad, only throwing and pentathlon events were performed. In the modern Paralympic Games, track and field athletics is the sport with the largest number of participating athletes, competing in eight track events (100, 200, 400, 800, 1500, 5000, and 10,000 m and marathon), six field events (long jump, high jump, triple jump, javelin, discus, and shot put), and one combined event (pentathlon). They compete in male and female categories and are classified in 1 of the 26 sport classes, according to their disability type and motor function (motor, physical, visual, and intellectual). Athletes who participate in track events use the letter T before the class number to indicate the event type, whereas those participating in field events use

the letter F (18). This short introduction serves to highlight the complexity and variety of Paralympic athletic events, which is also reflected in the development and understanding of research in the discipline.

To compete, visually impaired athletes must be submitted to a visual classification, where an ophthalmologist evaluates acuity and visual field. Athletes can be categorized in one of three levels: B1 are considered blind athletes (from no light perception in either eye, up to light perception but unable to recognize the shape of a hand at any distance or direction), B2 are considered to have severely impaired vision (from ability to recognize the shape of a hand, up to a visual acuity of 20/600 or a visual field of less than 5° in the best eye with the best practical eye correction), and B3 are considered to have moderate to poor vision (visual acuity above 20/600 to 20/200, or a visual field of less than 20°

Epidemiology Studies

EPIDEMIOLOGY

Aspects of Sports Injuries in Athletes with Visual Impairment

LOCOMOTOR APPARATUS IN
EXERCISE AND SPORTS



ORIGINAL ARTICLE

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ABSTRACT

Most research on sport injuries in disabled athletes uses a cross-disability (physical and sensorial) design and merges different sport modalities in the same study. This procedure creates difficulties in interpreting the results, since different disabilities and modalities may cause different injury conditions. The purpose of this study was to analyze the sports injuries frequency in visually impaired athletes, to identify the site of the injury, its mechanism, and the main injuries that occur to these athletes as well as to verify if the visual class relates to the sports injury frequency. The subjects were male and female visually impaired athletes, members of the Brazilian team of athletics, soccer 5, goalball, judo, and swimming, who played in international competitions between 2004 and 2008. Data was collected using the Brazilian Paralympic Committee and the Brazilian Confederation of Sports for the Blind medical form, which included the following information: name, age, modality, competition, visual classification (B1, B2, B3), injury type, location of injury, and diagnosis. A total of 131 athletes participated in this study: 42 female, 89 male amongst which 61 were B1, 46 B2, and 24 B3. Five athletes had 103 injuries, 136 athletes had 282 injuries,

DOI: 10.4025/reveducfis.v24.1.17021

RELAÇÃO ENTRE ESTADOS DE HUMOR, VARIABILIDADE DA FREQUÊNCIA CARDÍACA E CREATINA QUINASE DE PARA-ATLETAS BRASILEIROS

RELATIONSHIP BETWEEN MOOD STATES, HEART RATE VARIABILITY AND CREATINE KINASE OF BRAZILIAN PARA-ATHLETES

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Maria Regina Ferreira Brandão^{*****}

RESUMO

Objetivo deste estudo foi investigar a relação entre os estados de humor, a variabilidade da frequência cardíaca (VFC) e creatina quinase (CK) de para-atletas brasileiros. Foram avaliados 12 atletas, integrantes da Seleção Brasileira de Para-Atletismo. Para avaliar a resposta autonômica foi determinada a VFC em repouso, coletando os intervalos R-R em 10 min. Foram coletadas também amostras de sangue para analisar a CK total e para conhecer os estados de humor dos atletas, foi utilizado a Escala de Brums, sendo calculados os seis estados de humor (tensão, depressão, raiva, fadiga, confusão e vigor). A análise dos dados foi realizada pela correlação de Sperman. Os principais resultados demonstraram relação entre a modulação parassimpática e o Vigor dos atletas ($r = 0,50$ a $0,53$; $p < 0,05$). A CK não se relacionou com nenhum marcador. Conclui-se que houve relação entre a modulação parassimpática da VFC e o Vigor, o que é positivo para o rendimento na competição.

Palavras-chave: Psicofisiologia, Creatina Quinase, Sistema Nervoso Autônomo.

AVALIAÇÃO DA QUALIDADE DE VIDA E DO SONO DE ATLETAS PARALÍMPICOS BRASILEIROS

EVALUATION OF THE QUALITY OF LIFE AND SLEEP IN BRAZILIAN PARALYMPIC ATHLETES

EVALUACIÓN DE LA CALIDAD DE VIDA Y SUEÑO DE ATLETAS PARALÍMPICOS BRASILEÑOS

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DOI: <http://dx.doi.org/10.4025/reveducfis.v24.1.17021>

RESUMO

Introdução: o esporte paralímpico brasileiro vem ganhando destaque no cenário mundial e, com isso, a avaliação de variáveis que possam influenciar positivamente no desempenho desses atletas é de suma importância para o acompanhamento durante o seu período de treinamento. Objetivo: avaliar a qualidade de vida e do sono de atletas brasileiros. Métodos: foram estudados 49 atletas paralímpicos das modalidades natação e atletismo. Os atletas responderam a questionários que avaliaram seu padrão e queixas de sono e de qualidade de vida. Resultados: a maioria dos atletas (65,30%) relatou má qualidade de sono, visto que a latência foi significativamente maior do que em atletas com boa qualidade de sono. Cinquenta por cento dos atletas relataram o desejo de fazer mudanças em seu horário de sono e 52% gostariam de aumentar a duração do sono. A sonolência diurna excessiva foi observada em 53,06% dos atletas. Quanto às queixas de qualidade de vida, foram relatados chute ou espasmos das pernas e ronco. Menores índices de qualidade de vida foram relatados no meio ambiente em comparação com os domínios físicos, psicológicos ou sociais. Conclusão: os atletas sugerem que a maioria dos atletas apresentou uma má qualidade do sono e, consequentemente, um índice de insatisfação com o sono. Além disso, menores escores de qualidade de vida foram relatados no meio ambiente, que está relacionado com a segurança física, proteção e condições em casa.

Palavras-chave: Qualidade de vida, sono, qualidade de vida, atividade física, distúrbios do sono.

ORIGINAL ARTICLE

ENGLISH VERSION



The visual acuity variability during physical efforts in low vision athletes from the athletics Brazilian team*

Ciro Winckler de Oliveira Filho, José Júlio Gavião de Almeida, Roberto Vital, Keila Miriam Monteiro de Carvalho and Luiz Eduardo Barreto Martins

ABSTRACT

Introduction and objective: This study had as an objective to evaluate the visual acuity behavior in athletes with low vision, during a continuous effort protocol. Researches point out that visual acuity presents performance varieties when submitted to physical efforts in subjects without visual impairment. **Method:** The studied population was composed by six peoples, who practiced athletics and were part of the Brazilian team in track events. The progressive physical effort test was applied on the first day in a treadmill. On the second day the continuous effort test was applied, which was divided in three levels, each one had a 15 and 30 minutes break between them. To determine the intensities, the results obtained in the progressive physical effort test (60% of VE peak, 100% VE and 90% VE peak) were used. The visual acuity was measured before, during and after each level of intensity in the continuous effort protocol. The t Student test was used for statistical analysis ($p < 0,05$).

Results: The visual acuity presented a significant decrease during the progressive physical effort test. The visual acuity was significantly lower during the continuous effort test, especially during the 30 minutes break between them.

Conclusion: The visual acuity presented a significant decrease during the progressive physical effort test. The visual acuity was significantly lower during the continuous effort test, especially during the 30 minutes break between them. The visual acuity was significantly lower during the continuous effort test, especially during the 30 minutes break between them.

Suplemento do 1º EPEPS

Fluxo no para-atletismo

Flow in paralympics track and field

S.S. Gomes, G.S. Leite, V. Pedrinelli, R. Ferreira, R. Brandão

ARTIGO ORIGINAL | ORIGINAL ARTICLE

RESUMO

O objetivo deste estudo foi avaliar a predisposição ao fluxo de 24 atletas pertencentes à Seleção Brasileira de Para-Atletismo. Os atletas responderam a um questionário geral e a Escala de Fluxo de Flow State. Os resultados apontaram uma média de fluxo total igual a 3,85, o que é considerado bom. As dimensões do fluxo que se destacaram foram a motivação (M = 4,45). Correlações positivas e significativas foram encontradas entre o fluxo total e o fluxo de Flow State. Portanto, o fluxo é um fenômeno relevante para a performance dos atletas em para-atletismo.

Sleep quality and psychobiological aspects of Brazilian Paralympic athletes in the London 2012 pre-Paralympics period

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Chase the answers to the Goaches interrogations





Athletes Evaluation

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graph TD; A[Athletes Evaluation] --> B[Analyses of the results]; B --> C[Just in Time]; C --> D[Feedback for the athletes]; D --> A;
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Feedback for the athletes

- Direct
- Indirect (publish the information)

Just in Time

- Feedback for the athletes and coaches

Analyses of the results

- Identify typical behaviour
- Characteristic of the disability's group

Evaluation Model

Jet Leg Evaluation

Sleep quality evaluation, chronotype, sleepiness and anxiety of Paralympic Brazilian athletes: Beijing 2008 Paralympic Games

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ABSTRACT

Objective: The objective of this study was to evaluate the sleep quality, sleepiness, chronotype and the anxiety level of Brazilian Paralympic athletes before the 2008 Beijing Paralympic Games.

Design: Cross-sectional study.

Setting: Cardinal and Psychobiology Studies Center (COP) and Universidade Federal de São Paulo, an urban city in Brazil.

Participants: A total of 27 Paralympic athletes of both genders (15 men and 12 women) with an average age of 26.6 years who practiced athletics (track and field events) were included.

Main outcome measures: Sleep quality was evaluated using the Pittsburgh Sleep and the Epworth Sleepiness Scale to measure sleepiness. Chronotype was determined by the Morningness-Eveningness Questionnaire and anxiety through the State-Trait Anxiety Inventory. The evaluations were performed in four 10 days before the competition.

Results: The study's results demonstrated that 62.2% of the athletes that presented excessive daytime sleepiness also had poor sleep quality. The authors noted that 71.4% were classified into the morning type and 17% of the athletes who presented a moderate anxiety level also presented poor sleep quality. Athletes with poor sleep quality showed significantly lower sleep efficiency ($p=0.0118$) and greater sleep latency ($p=0.0002$). Athletes with good sleep quality, however, who presented excessive daytime sleepiness presented lower sleep efficiency compared to non-sleepy athletes ($p=0.0002$).

Conclusions: The authors conclude that the majority of athletes presented poor sleep quality before the competition. The information should be taken into consideration whenever possible when scheduling and training.

Context: Brazilian athletes traveled around the world to go to the 2008 Beijing Paralympic Games.

The Paralympic athletes have to compete and perform their best each year. Thus, the study of variables that directly influence their body state and individual athletic results and performance are the focus of significant research from researchers and athletes. It is known that these variables are linked to nutritional, physical and physiological/psychological aspects that are directly related to performance.

Even though the athletes are well trained technically, tactically and physically, better and "smoother" results can be achieved through a better study of several aspects during a competition such as physical, psychological and nutritional. Therefore, well-prepared athletes can obtain satisfactory physical and nutritional performance during competition when they are under strong pressure or fatigue and/or stress. However, when athletes also experience their performance if they present a good level of precompetition anxiety, it may lead to an appropriate nutritional and physical performance.

The athletes' excessive daytime sleepiness led to several consequences. If athletes have poor sleep efficiency, it can lead to fatigue, irritability, decreased performance, and even to injuries. Therefore, they can get into trouble, leading to a decrease in their performance.

Some evidence suggests that athletes present a better adaptation to physical training when they are well-rested and healthy. It is known that athletes who are well-rested and healthy can perform better during competition.



CRONOGRAMA DE ADAPTAÇÃO AO FUSO HORÁRIO DA EQUIPE DE ATLETISMO PARAOLÍMPICA BRASILEIRA

VIAGEM SÃO PAULO (Brasil) / CHRISTCHURCH (Nova Zelândia)

PERÍODO DE 05 DE JANEIRO a 21 DE FEVEREIRO DE 2010

Data	Origem	Destino	Horário	Tempo	Tempo	Tempo
05/01	São Paulo	Christchurch	08:15	12:00	04:45	12:00
06/01	Christchurch	Christchurch	08:15	12:00	04:45	12:00
07/01	Christchurch	Christchurch	08:15	12:00	04:45	12:00
08/01	Christchurch	Christchurch	08:15	12:00	04:45	12:00
09/01	Christchurch	Christchurch	08:15	12:00	04:45	12:00
10/01	Christchurch	Christchurch	08:15	12:00	04:45	12:00
11/01	Christchurch	Christchurch	08:15	12:00	04:45	12:00
12/01	Christchurch	Christchurch	08:15	12:00	04:45	12:00
13/01	Christchurch	Christchurch	08:15	12:00	04:45	12:00
14/01	Christchurch	Christchurch	08:15	12:00	04:45	12:00
15/01	Christchurch	Christchurch	08:15	12:00	04:45	12:00
16/01	Christchurch	Christchurch	08:15	12:00	04:45	12:00
17/01	Christchurch	Christchurch	08:15	12:00	04:45	12:00
18/01	Christchurch	Christchurch	08:15	12:00	04:45	12:00
19/01	Christchurch	Christchurch	08:15	12:00	04:45	12:00
20/01	Christchurch	Christchurch	08:15	12:00	04:45	12:00
21/01	Christchurch	Christchurch	08:15	12:00	04:45	12:00



Universidade Federal de São Paulo – UNFESP
Departamento de Psicobiologia

Nome: _____

CEPE

INSTRUÇÕES

- Ouça com atenção cada questão antes de responder.
- Responda a todas as questões.
- Para cada questão coloque apenas uma resposta.
- Responda a cada questão com toda a honestidade possível. Suas respostas e os resultados são confidenciais.

AVIAÇÃO DE FADIGA

Nome: _____

Data: _____

O questionário abaixo avalia a presença de fadiga. Se (a) Sr (a) está sentindo fadiga atualmente, assinale a questão que melhor descreve sua sensação de fadiga no momento atual quando comparado com o período em que (a) Sr (a) não sentia esta sensação de fadiga. Caso atualmente não tenha esta sensação de fadiga, assinale "NÃO MAIS QUE O NORMAL".

	Menos que o normal (0)	Não mais que o normal (0)	Mais que normal (1)	Muito mais que normal (1)
1- O(a) Sr (a) tem problemas com cansaço?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2- O(a) Sr (a) precisa descansar mais?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3- O(a) Sr (a) sente sonolento ou mais lento?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4- O(a) Sr (a) tem problemas em dar início às atividades?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5- O(a) Sr (a) anda com falta de energia?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6- O(a) Sr (a) tem menos força muscular?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Sleep quality evaluation, chronotype, sleepiness and anxiety in Acclimatization period in Beijing 2008

Acclimatization Manual to IPC Athletics 2011

TABLE 1 H/Q ratio values at the three assessments

	First Assessment		Second Assessment		Third Assessment	
	Right	Left	Right	Left	Right	Left
H/Q, 60 degrees/sec	56.3 ± 12.7	52.5 ± 6.9	53.1 ± 7.1	53.2 ± 3.4	56.0 ± 10.1	53.9 ± 6.7
H/Q, 180 degrees/sec	68.0 ± 11.2	66.2 ± 8.6	65.7 ± 8.4	65.5 ± 6.3	66.3 ± 9.2	64.6 ± 7.3
H/Q, 300 degrees/sec	80.8 ± 11.6	75.9 ± 8.4	74.4 ± 11.2 ^a	73.8 ± 6.6	76.7 ± 9.9	74.0 ± 6.6

^a*P* = 0.01, significant difference relative to the first assessment.

TABLE 2 Number of athletes who presented imbalance in relation to H/Q (<47%) at 60 degrees/sec and the number of complaints related to the knee and thigh

	Imbalance		Without Imbalance	
	With Complaints	No Complaints	With Complaints	No Complaints
First assessment (<i>n</i> = 14)	4	2	1	7
Second assessment (<i>n</i> = 14)	4	1	1	8
Third assessment (<i>n</i> = 11)	5	1	0	5

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Disclosures:

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Paralympic Athletes

ORIGINAL RESEARCH ARTICLE

Isokinetic Assessment and Musculoskeletal Complaints in Paralympic Athletes

A Longitudinal Study

ABSTRACT

Silva A, Zanca G, Alves ES, de Aquino Lemos V, Gávea SA, Winckler C, Mattiello SM, Peterson R, Vital R, Tufik S, De Mello MT: Isokinetic assessment and musculoskeletal complaints in paralympic athletes: a longitudinal study. *Am J Phys Med Rehabil* 2015;00:00–00.

Objective: The aim of this study was to assess and monitor the peak torque of the knee extensor and flexor muscles in flexion and extension and the reports of musculoskeletal complaints in members of the main Brazilian Paralympic athletics team through 1 yr.

Design: Fourteen healthy athletes from both sexes were assessed three times in 1 yr. The volunteers were assessed for the presence of musculoskeletal complaints and muscle strength at three time points: (1) at the onset of the preparatory phase on December 2009, (2) at a follow-up assessment on June 2010, and (3) before actual competition on December 2010. The athletes' self-reported musculoskeletal complaints were assessed in structured interviews, and the muscle strength was assessed by means of isokinetic dynamometry.


Results: The knee flexor and extensor muscle strength exhibited significant increase in both the right and left lower limbs at the second and third assessments compared with the first one (*P* < 0.05). Muscle imbalance was associated with knee and thigh complaints at all three assessments (*P* < 0.05).

Conclusions: The knee flexor and extensor muscle strength exhibited a gradual increase in both lower limbs during the course of the three assessments. In parallel, muscle imbalance was associated with the occurrence of knee and thigh complaints.

Key Words: Isokinetic Assessment, Injury Prevention, Paralympic Athletes

Intervention Training's Routine






I Semana de Treinamento e Avaliação de São Caetano
Protocolo de Prevenção de Lesões
Modalidade Para-Atletismo
Parte 1

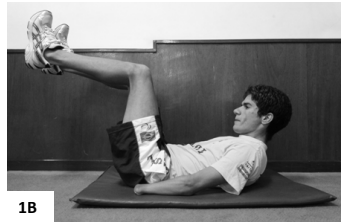
Ronnie Peterson
Andressa de Mello
Fisioterapeutas do CPB

Exercícios que promovem uma corrida mais uniforme e ajuda a evitar lesões.

Exercícios de Alongamentos
Iniciar o protocolo com alongamentos dos membros inferiores e superiores.

Exercício 1 – Ativação do Centro de Força
Centro de Força: A contração simultânea dos abdominais e assoalho pélvico (prender o xixi).
Deitado com barriga para cima, joelhos e quadril flexionados a 90°. Manter contração dos abdominais e assoalho pélvico durante 3 ciclos respiratórios (Foto 1A). Com o controle de centro de força ativado, realizar elevação de tronco simultaneamente durante 3 ciclos respiratórios com padrão diafragmático (enchendo a barriga), sempre mantendo a postura inicial (Foto 1B).


1A


1B



Best Result
in
IPC Athletics WC



TOP 3 at Medal Table
No Muscle Injuries
in the competition

MUSCULOSKELETAL COMPLAINTS AND PHYSIOTHERAPEUTIC PROCEDURES IN THE BRAZILIAN PARALYMPIC DELEGATION DURING THE PARALYMPIC ATHLETICS WORLD CHAMPIONSHIP IN 2011

LOCOMOTOR APPARATUS IN EXERCISE AND SPORTS



ORIGINAL ARTICLE

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Ronnie Peterson³
Gisele Garcia Zanca¹
Roberto Vital³
Roberto Itiro³
Ciro Winckler^{3,4}
Edilson Alves da Rocha³
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ABSTRACT

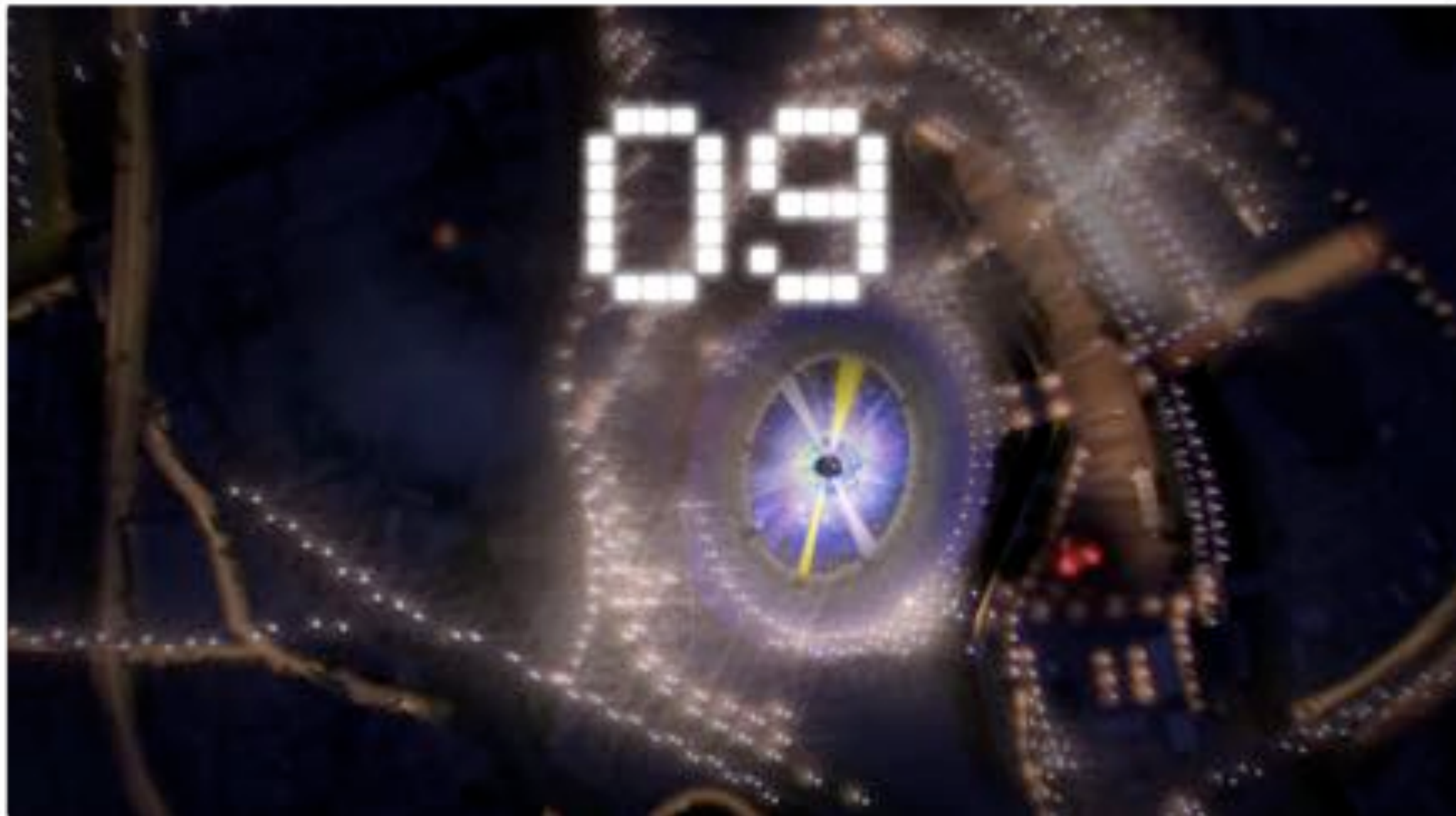
Introduction: Athletics is an umbrella sport with high incidence of musculoskeletal injuries; however, the literature presents little information on injuries in Paralympics athletics. **Objective:** This study was to describe the profile of the musculoskeletal complaints, their anatomical locations, and physiotherapeutic resources used during the Paralympic Athletics World Championships in Christchurch in 2011. **Methods:** The Brazilian delegation included 34 athletes. Their musculoskeletal complaints, affected anatomical regions, and the physiotherapy resources used were daily recorded for all of the physiotherapy sessions. The sessions were held in the hotel that hosted the delegation and at the competition venue. **Results:** Out of the 34 athletes, 25 (73.5%) were treated at the Department of Physiotherapy. The main complaints were myalgia (38.4%), followed by arthralgia (23%). The region of the body with the most complaints was the thigh (n = 8, 30.7%), followed by the knee (n = 6, 23%). A total of 428 physiotherapy sessions were performed. At the hotel, the mostly used therapeutic approach was the ultrasound (35.1%), followed by TENS (31.2%) and cryotherapy (23.3%). At the competition venue, the mostly used therapeutic approach was cryotherapy (44.1%), followed by massage (37.2%). **Conclusion:** The results of this study contribute to a better understanding of the major injuries in this sport and help to develop programs aimed for injury prevention.

Keywords: athletic injuries, athletic performance, physiotherapy.



Figure 2. Percentage of the musculoskeletal complaints per anatomical location.





Crossroads

Redirection of the Focus



Zoom at the Frontier...

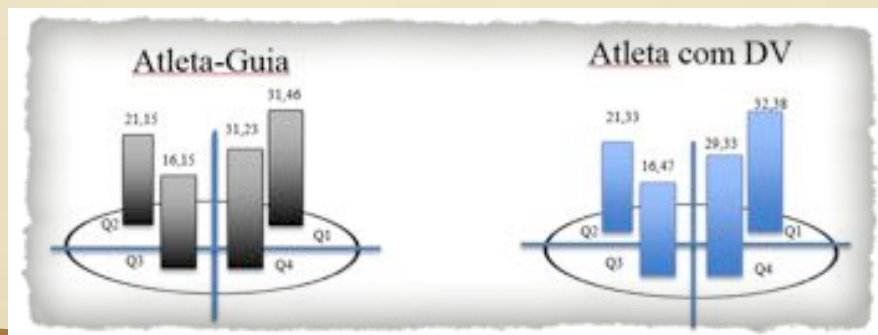


	VI	SD	Gui de	SD	p
HR max	169	10	169	13	0,6
VO2 max mL/kg/min	42,5	7,5	43,3	4,2	0,9
VO2 max L/ min	2,85	0,6	3,33	0,3	0,0

	Equations	GUIDE n=14	VI n=11	AMP** n=8	CP n=8
Skinfolds	Cunningham (1991) ^[31]	117	188	173	148
	Cunningham (1980) ^[30]	270	341	326	299
	Owen (1986,1987) ^[27,28]	82	169	117	125
Plethysmography	Cunningham (1991) ^[31]	109	204	163	163*
	Cunningham (1980) ^[30]	265	357	315	314*
	Owen (1986,1987) ^[27,28]	74	169	103	116
	Harris & Benedict (1919) ^[11]	104	204	144	198
	DRI (2002) ^[6]	74	164	144	145
	FAO/OMS (1985) ^[46]	133	206	170	159
	Mifflin (1990) ^[29]	41	146	109	130

The graph displays the number of people at a fair over a 62-minute period. The x-axis represents time in minutes, and the y-axis represents the number of people. Two lines are plotted: a solid black line for the actual number of people and a dotted red line for the expected number of people.

Time (minutes)	Actual Number of People	Expected Number of People
0	0	0
2	0	0
4	0	0
6	0	0
8	0	0
10	12	10
12	11	11
14	10	12
16	9	11
18	8	10
20	5	5
22	4	4
24	3	3
26	2	2
28	1	1
30	0	0
32	0	0
34	0	0
36	0	0
38	0	0
40	0	0
42	0	0
44	0	0
46	0	0
48	0	0
50	0	0
52	0	0
54	0	0
56	0	0
58	0	0
60	0	0
62	0	0



#70

Evaluation of Muscle Imbalances and the Relationship with Sport Injuries in Athletes with Visual Impairment and their Guides

M.P. Magno e Silva^{1,2}; R. Artese Barros²; C. Winckler^{2,3}; A. Silva de Mello; M. Túlio de Mello^{2,3}; R. Vital³; Andrea Miranda²; R. Nishimura

¹University of Campinas; ²São Paulo Federal University; ³Brazilian Paralympic Committee

Introduction: In Paralympic athletics blind (T11) and low vision athletes (T12) need a guide to compete. It is known that the running pattern of the athlete with visual impairment (VI) and the influence in the biomechanics. Previous studies evaluated the relationship between muscle and the risk of injury, and some of these studies agree that the isokinetic test is important to development of injuries.



	Athlete VI	GUIDE	Total
Number of participating subjects	10	13	23
Number of subjects with muscle imbalance	7	10	17
Number of injured subjects	5	6	11
Number of injuries	5	6	11

Table 1: Number of athletes and guides according to muscle imbalance and sport injuries.

		Function		Total
		Athlete VI	Guide	
Side	Right	1	6*	7
	Left	4*	0	4
	TOTAL	5	6	11

*p<0.03

Table 2: Distribution of injury by right and left side in athletes and guides.

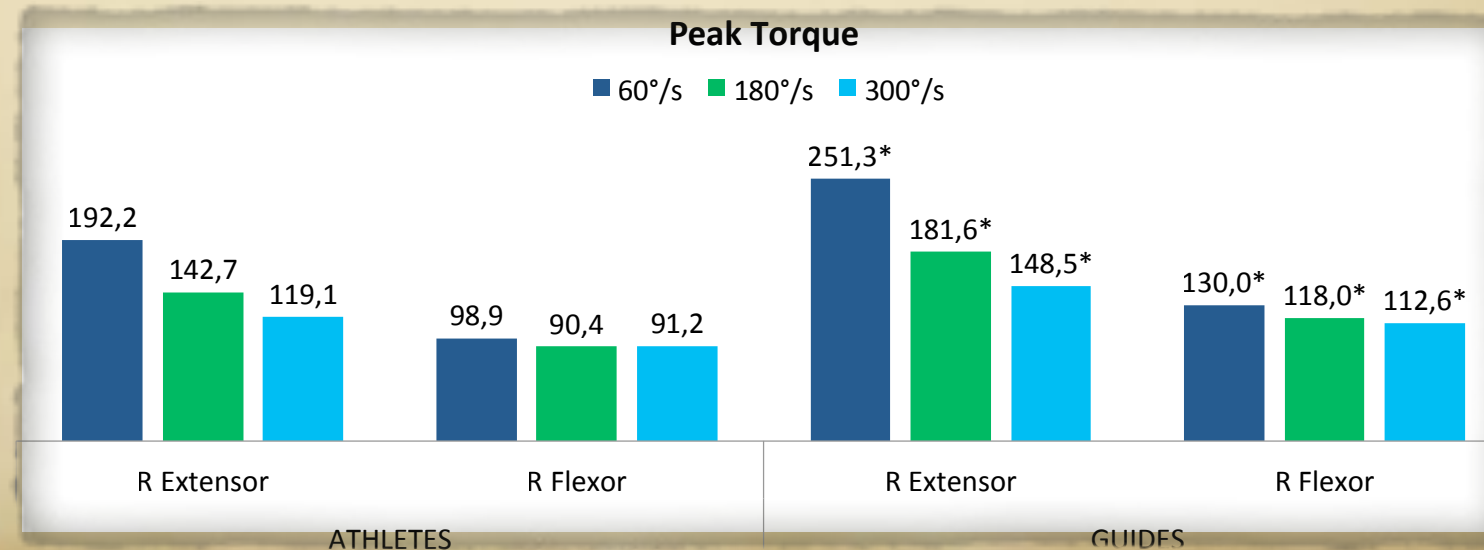


Figure 1. Maximal Oxygen Uptake in Individual Test



Running Economy



Tabela 1



	VI	SD	Guide	SD	p
HR max	169,78	10,80	169,69	13,10	0,60
VO2 max mL/kg/min	42,31	7,56	43,30	4,22	0,91
VO2 max L/min	2,85	0,64	3,33	0,37	0,02

In Review: Juzwiak, C et al. COMPARISON OF MEASURED AND PREDICTIVE VALUES OF BASAL METABOLIC RATE IN BRAZILIAN PARALYMPIC ATHLETICS' ATHLETE

Table 6 - Root Mean Squared Prediction Error (RMSPE) (kcal) of predicted BMR in comparison to measured BMR, according to disability

	Equations	GUIDE n=14	VI n=11	AMP** n=8	CP n=8
Skinfolds	Cunningham (1991) ^[31]	117	188	173	148
	Cunningham (1980) ^[30]	270	341	326	299
	Owen (1986,1987) ^[27,28]	82	169	117	125
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	FAO/OMS (1985) ^[46]	133	206	170	159
	Mifflin (1990) ^[29]	41	146	109	130

AMP = amputees; VI= visually impaired; CP= cerebral palsy

**Data from three AMP athletes (2 men and 1 woman) with amputation $\geq 10\%$ of body mass were not considered.

*Data from on female CP athlete was not available.



MUNDIAL DE ATLETISMO IPC - LYON, 2013 MEDALHISTAS DE OURO

Alan Fonteles de Oliveira (T43) Ouro nos 100m, 200m (RM) e 400m (RC)	Jonathan Santos Ouro no Lançamento de Disco (Melhor marca pessoal)	Terezinha Guilhermina (T11) ouro nos 100m (SB), 200m (RC) e 400m (RC)
Daniel Mendes da Silva (T11) Ouro nos 400m (RC)	Lucas Prado (T11) Ouro nos 100m e 200m	Odair Santos (T11) Ouro nos 800m (RC), 1.500m e 5.000m (SB)
	Lorena Spoladore (T11) Ouro no salto em distância	Verônica Hipólito (T38) Ouro nos 200m (RC)
		Yohansson Nascimento (T46) Ouro nos 200m (RM)

RM = recorde mundial
RC = recorde da competição
SB = melhor marca da temporada

In review: POWER AND SPEED DIFFERENCES BETWEEN BRAZILIAN PARALYMPIC SPRINTERS WITH VISUAL IMPAIRMENT AND GUIDES: A PILOT STUDY

Table 1. Comparisons of the performance in vertical and horizontal jump tests between AVI and guide athletes. la 1

	VI	Guide	Difference (95% CI)	Effect Size
SJ (cm)	35.9 ± 6.3	45.6 ± 3.2*	29.2 % (19.5 – 39.3)	1.5 (Large)
CMJ (cm)	38.5 ± 6.2	46.7 ± 4.0*	23.2 % (14.2 – 32.1)	1.3 (Large)
QR (m)	9.2 ± 1.9	12.7 ± 1.0*	42.3 % (26.3 – 58.1)	1.7 (Large)
QL (m)	9.4 ± 1.9	13.1 ± 0.8*	45.4 % (26.9 – 63.9)	2.0 (Large)
DEC (m)	21.0 ± 3.3	27.2 ± 1.7*	32.6 % (20.1 – 45.1)	1.9 (Large)

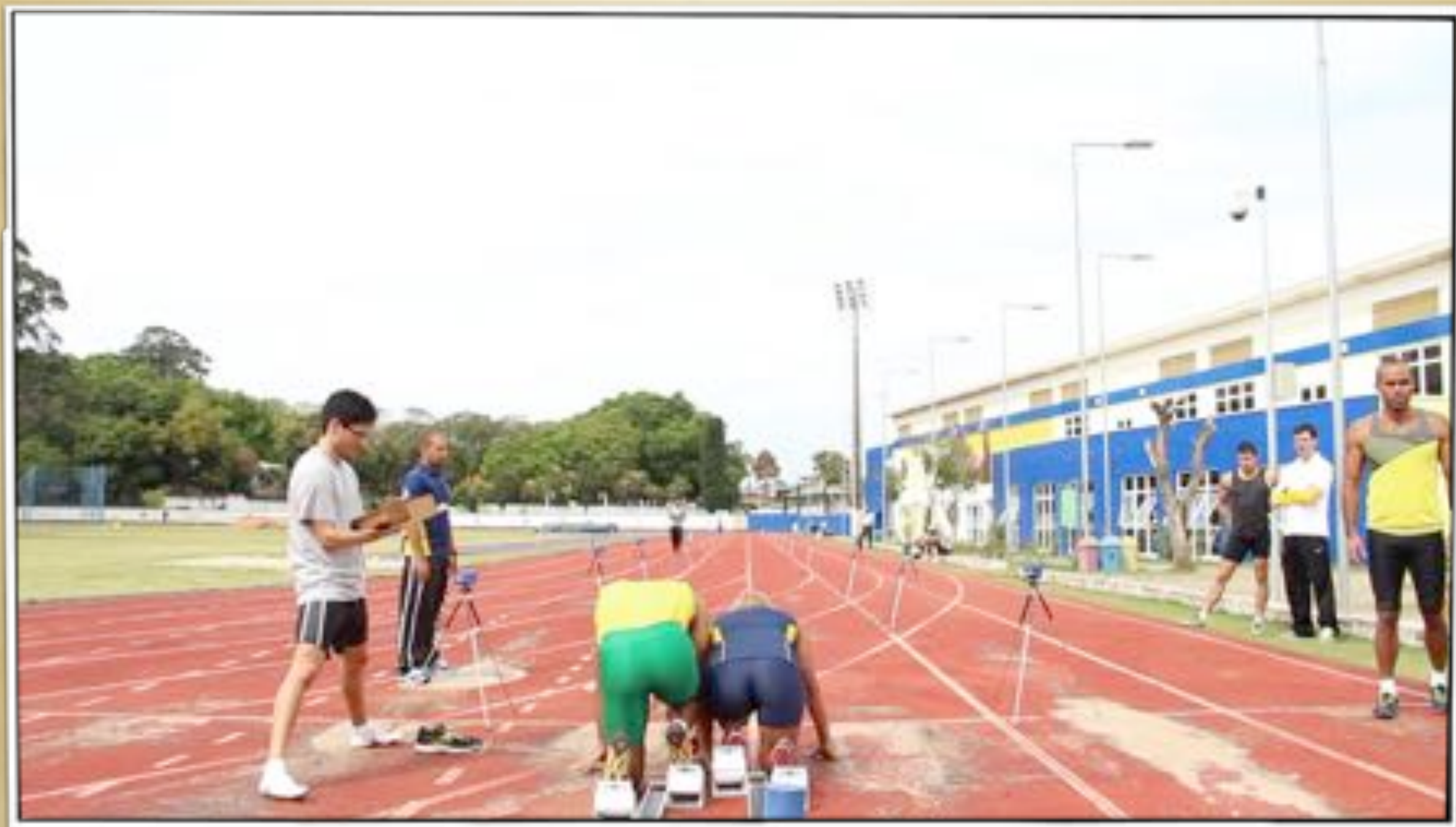
SJ = squat jump; CMJ = countermovement jump; QR = quintuple jump with right leg; QL = quintuple jump with left leg; DEC = decuple jump; CI = confidence interval; * $P < 0.05$.



AVI presented strong associations between VEL 50 m and vertical jumps (SJ = 0.80 and CMJ = 0.84; $P < 0.01$)

Surprisingly, differently from AVI and Olympic athletes, the **guides did not present significant** correlations between jumping and sprinting ability.





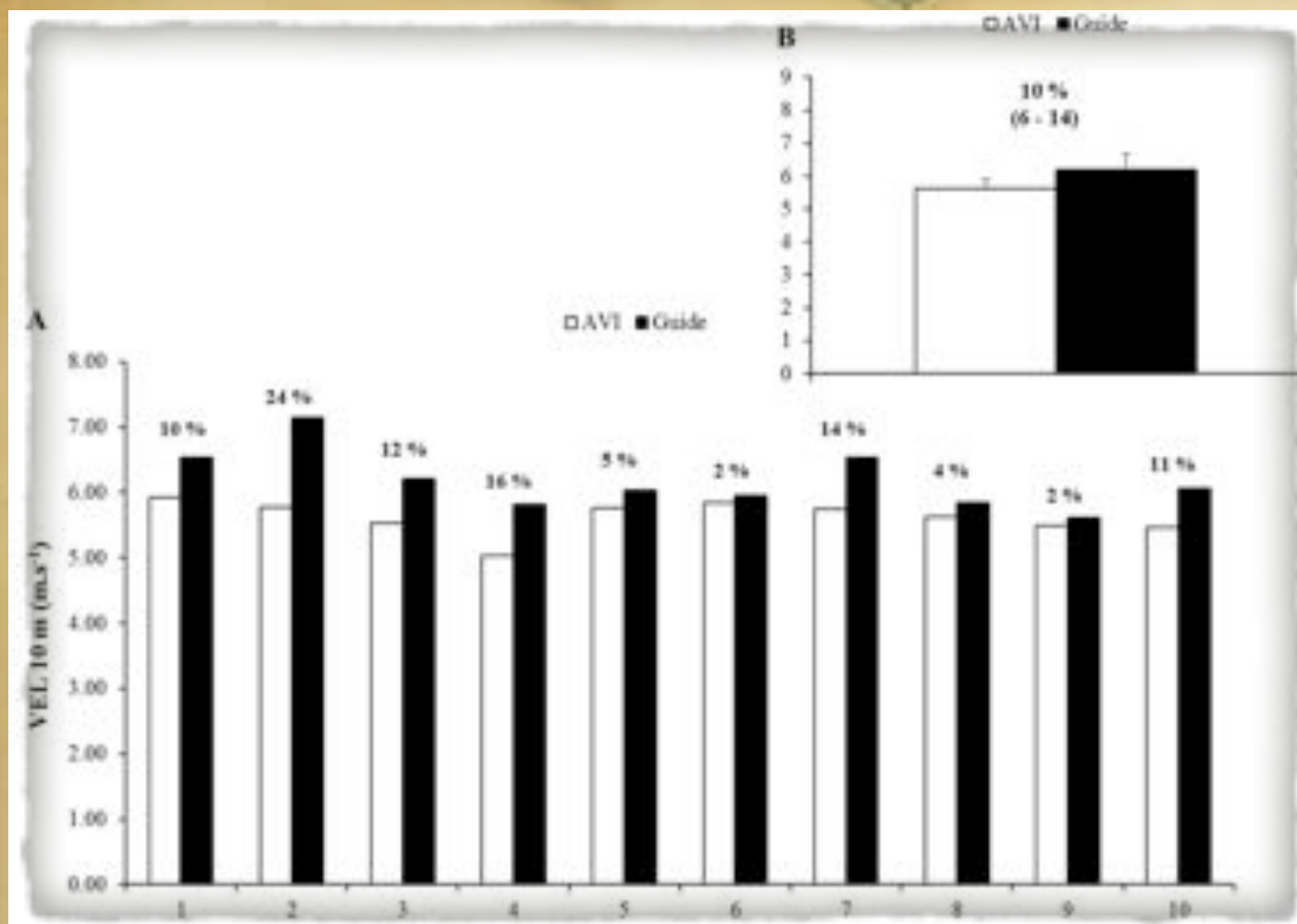


Figure 1. Comparisons of the velocities in 10 m between AVI and guide athletes.

ES = 2.1 (*Large*), $P < 0.05$.

Panel A individual comparisons.
Panel B means of the groups and the magnitude of the difference (%), between parentheses are presented the 95% confidence interval of difference

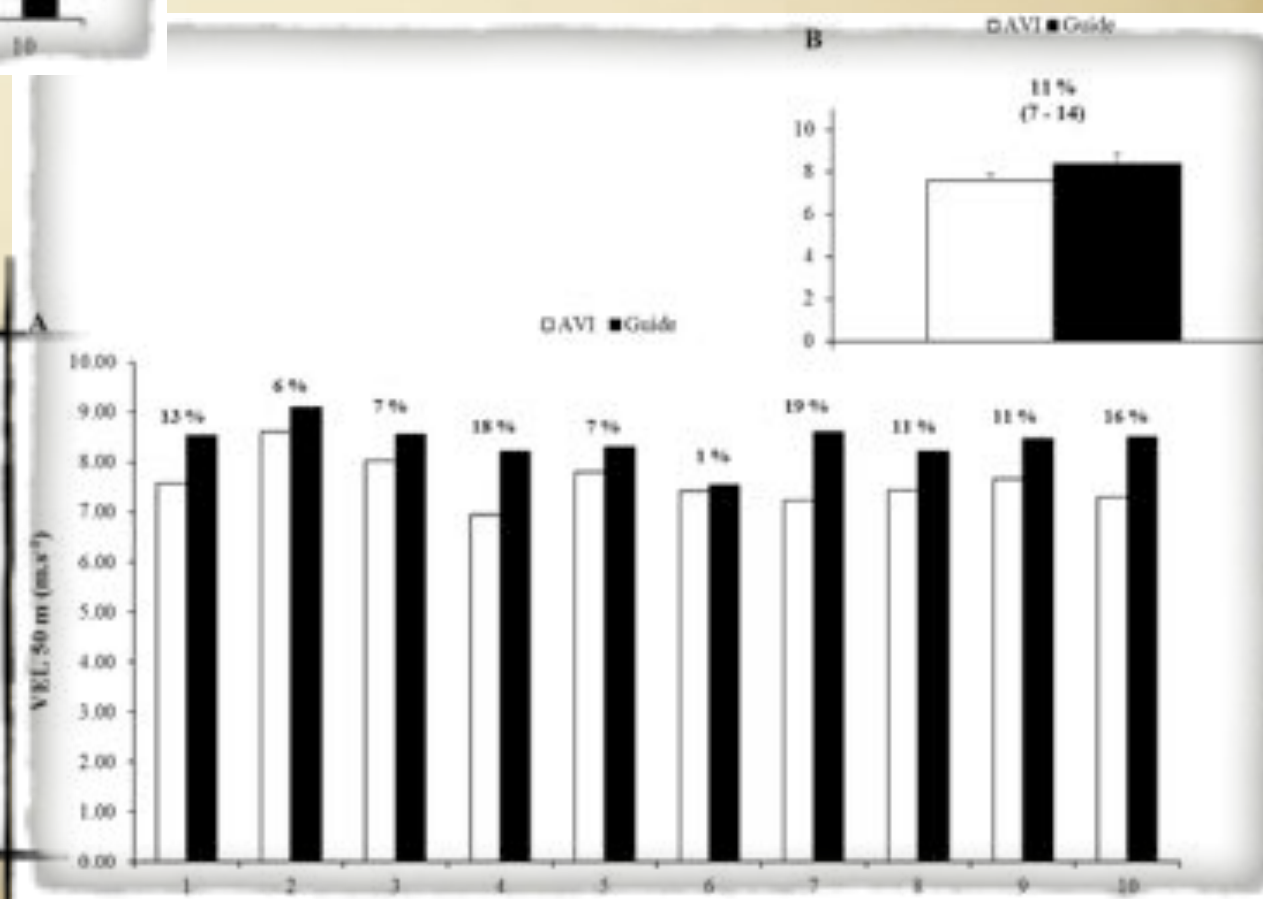


Figure 2. Comparisons of the velocities in 50 m between AVI and guide athletes.

ES = 1.7 (*Large*), $P < 0.05$.

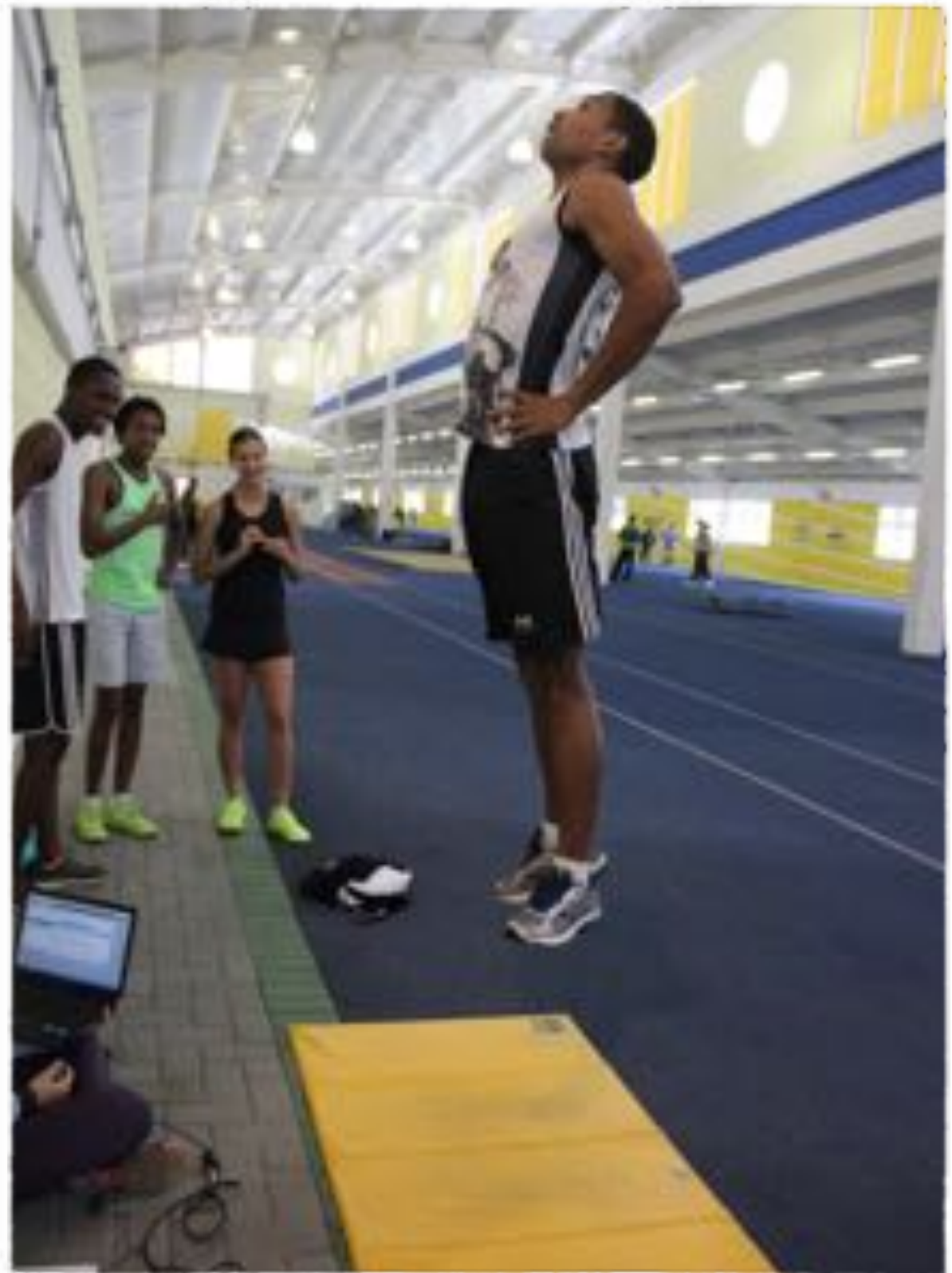
Impact on the Training

Modification of Guides
Training
Volume and Intensity

$r^2 = .36$



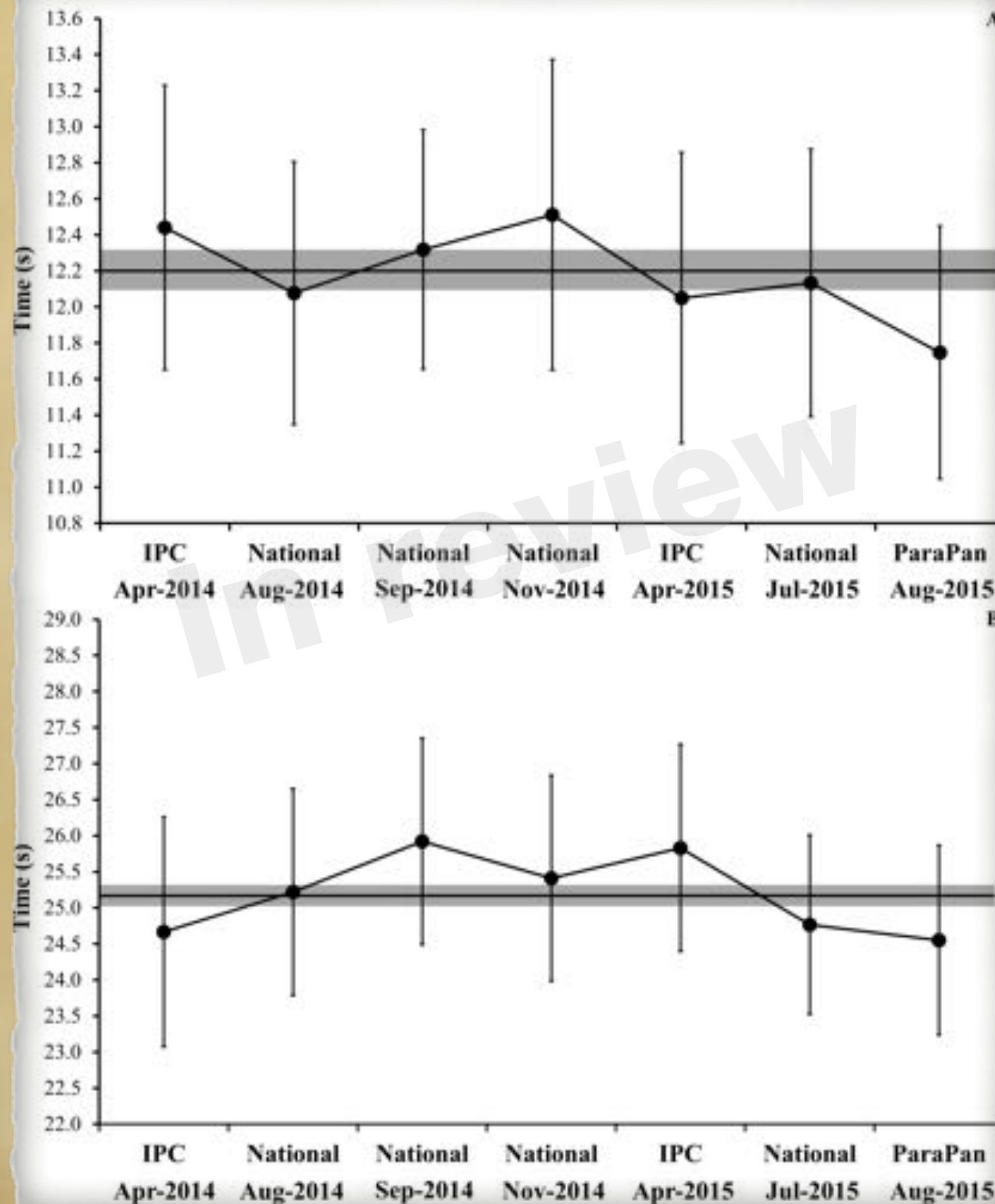
.54





IPC ATHLETICS
WORLD CHAMPIONSHIPS
LYON 2013

TOP 3 at Medal Table
Limited number of
Muscle Injuries
in the competition



Performance changes and relationship between vertical jump measures and actual sprint performance in elite sprinters with visual impairment throughout a Parapan American games training season

Irineu Loturco^{1*}, Ciro Winckler², Ronaldo Kobal¹, Cesar C. Cal Abad¹, Katia Kitamura¹, Amaury W. Verissimo², Lucas A. Pereira¹, Fábio Y. Nakamura¹

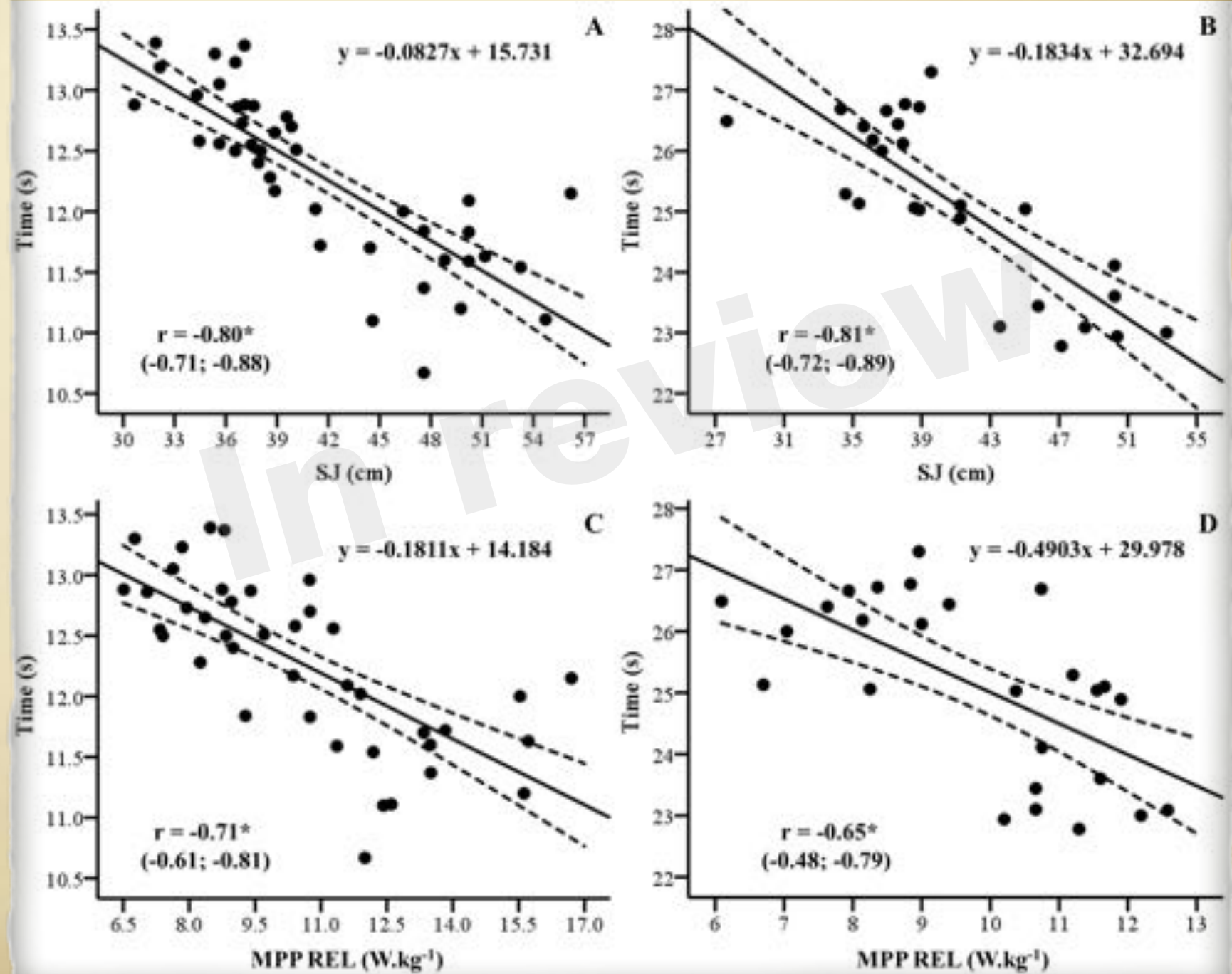
¹NAR - NUCLEUS OF HIGH PERFORMANCE IN SPORT, Brazil, ²CPB - Brazilian Paralympic Committee, Brazil

TABLE 1

Table 1. Predictions of 100- and 200-m dash performances using multiple regression analysis.

	R^2	Equation
100-m	0.66*	$y = 15.558 - (0.063 \times \text{SJ}) - (0.061 \times \text{JS})$
200-m	0.66*	$y = 32.918 - (0.167 \times \text{SJ}) - (0.098 \times \text{JS})$

Note: SJ = squat jump; JS = jump squat; $P < 0.01$.



Analyzed using Reflectance Photometry



Hooper, S. L., et al.(1995). Markers for monitoring overtraining and recovery. Medicine and Science in Sports and Exercise.

Sleep
Quality

QUALIDADE DE SONO	
1	Muito, muito BOM
2	
3	
4	
5	
6	
7	Muito, muito RUIM

FADIGA	
1	Muito, muito POUCA
2	
3	
4	
5	
6	
7	Muito, muito ALTA

Fatigue

Stress

ESTRESSE	
1	Muito, muito POUCO
2	
3	
4	
5	
6	
7	Muito, muito ALTO

DOR MUSCULAR	
1	Muito, muito POUCA
2	
3	
4	
5	
6	
7	Muito, muito ALTA

Muscle
Pain



TOP 1 at Medal Table
No Muscle Injuries
in the competition



Next Steps....







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Thanks for your
attention!

