PostScript

RESEARCH LETTERS

Rapid responses

If you have a burning desire to respond to a paper published in Br J Sports Med, why not make use of our "rapid response" option?

Log on to our website (www.bjsportmed.com), find the paper that interests you, click on "full text" and send your response by email by clicking on "eletters" on our homepage. The editors will decide, as before, whether to also publish it in a future paper issue.

Significant association between fluctuations in serum urate and high density lipoprotein cholesterol during exhaustive training

Physical training is generally considered to increase serum high density lipoprotein (HDL)-C levels. However, how exhaustive training influences serum HDL-C levels remains unknown. Intense exercise increases oxygen consumption and free radical formation, and induces oxidation of low density lipoprotein (LDL). HDL plays an important protective role in LDL oxidation. An imbalance between free radical production and antioxidants is considered to lead to oxidation of LDL and subsequent alterations in serum HDL metabolism. This study investigates changes in serum urate, which is the most important intrinsic antioxidant, and serum lipids in male athletes after three weeks of exhaustive training.

We measured fasting serum lipids and urate in 11 male athletes (mean (SD) age 21.2 (2.2) years; height 168.3 (4.2) cm; body weight 65.4 (3.7) kg) before and after three weeks of exhaustive training. All the subjects performed the same intensity exercise, which consisted of a 20 (3) km run and isometric training for two hours every day for three weeks. The daily diet provided 9802 (209) kJ and consisted of about 12-15% protein, 55-65% carbohydrate, and 25-30% fat over the study period. None were taking drugs known to affect lipid and lipoprotein metabolism. Special care was taken to exclude athletes using anabolic drugs, vitamins, or other antioxidants or who were smokers. Serum lipids were measured by automated enzymatic means using Determiner TC (Kyowa Medex Co, Tokyo, Japan) for total cholesterol, AutoSera S TG-N (Daichi Pure Chemicals, Tokyo, Japan) for triglycerides, Determiner HDL-C (Kyowa Medex) for HDL-C, and Cholestest LDL (Daichi Pure Chemicals) for LDL-C. Serum urate was measured using the uricase calorimetric method (Fuji Co, Tokyo, Japan).

After three weeks of training, serum HDL-C levels increased in six subjects, and decreased in five (fig 1A). As expected, the changes in serum LDL-C levels were inversely associated with the change in serum HDL-C levels (data not shown). However, serum triglyceride levels were not significantly different after training in all participants (data not shown). Unexpectedly, serum urate levels decreased in all subjects with increased HDL-C levels, but increased in all with decreased HDL-C levels (fig 1B). The change in serum urate levels correlated significantly and inversely with the change in serum HDL-C levels (fig 2).

Physical activity is a widely accepted means representing a metabolic adaptation that contributes to a reduced risk of coronary heart disease. However, the influence of exhaustive training on serum HDL-C levels remains obscure. Our data show that the effect of the same conditioned exhaustive training on serum HDL-C levels varies greatly among individuals.

Furthermore, we identified a significant inverse correlation between the changes in serum urate, which is the most important intrinsic antioxidant, and HDL-C levels, indicating the close association between urate and HDL metabolism during exhaustive training. However, we should mention that the number of participants was limited and the detailed mechanisms underlying this phenomenon remain to be elucidated.

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References

3 Bowry VW, Stanley KK, Stocker R. High density lipoprotein is the major carrier of lipid hydroperoxides in human blood plasma from fasting donors. Proc Natl Acad Sci USA 1992;89:10316-20.

Are Reliable Change (RC) calculations appropriate for determining the extent of cognitive change in concussed athletes?

Reliable Change (RC) indices are a group of statistical techniques used in many areas of
Step 3: Calculate the RC score

This has led to the description itself and the related regression to the mean. The application of RC analyses to neuropsychological test data collected at baseline (preseason) and after a concussion. We have concerns about the statistical computation and interpretation of various RC indices.

RC techniques were first described by Jacobson and Traux, and were designed to aid decision making about the significance of cognitive changes in patients in whom an injury or intervention had taken place. These and subsequent authors' proposed that the most efficient way of determining whether an individual's score on a specific cognitive measure had changed was to express the magnitude of change—that is, a change score—as a function of the normal variation found for that measure. Normal variation in performance on the cognitive measure was estimated from a group of similar subjects in whom no injury or intervention had occurred.

Mathematically, the individual's change in performance on the cognitive measure was estimated in the numerator, and the normal variation in performance on that measure is expressed in the denominator as follows.

Step 1: Calculate the standard error of measurement (SE)

\[ S_e = \frac{S}{t \_r \_e} \]

Step 2: Calculate the standard error of difference (SEdiff)

\[ SE_{diff} = \sqrt{S_e^2 + \frac{SUMSQ}{N(N-1)}} \]

Step 3: Calculate the RC score

\[ RC = \frac{x_1 - x_2}{SE_{diff}} \]

This technique can be interpreted as a z score, with a change of greater than ±1.65, indicating significant decline from baseline using a one tailed hypothesis. Such RC scores may also be interpreted as "effect size" calculations, very similar to Cohen's d scores as described by Zakianis. Our research group applies this calculation to neuropsychological test data gained in concussed athletes in many sports world wide and in many other medical and clinical applications where issues of change in an individual's cognitive status are pertinent. Corrections for practice effects and other confounding variables may also be included in this calculation as per current RC techniques.

Summary

RC analyses have the potential to inform return to play decisions in cases of sports related concussion, when applied to serially acquired neuropsychological test data. However, to be applied appropriately, such calculations should be performed cautiously to ensure that the magnitude of change in an individual's test score relative to change in a control group assessed at similar test-retest intervals. Previously described RC calculations do not meet this basic criterion, despite such control data being available.

References


www.bjpsortedmed.com
A 17 year old youth presented complaining of vague chest and back pain. His medical history was unremarkable except for a sports injury three to four months previously. The injury occurred during wrestling when his opponent had fallen on his chest and neck region. On physical examination, we noted an asymmetric neckline on the right, the result of atrophy in the upper portion of the trapezius muscle. Neck and bilateral shoulder movement, both passive and active, were not limited and were painless. There were no functional deformities such as winging scapula or drooping shoulder. No loss of motor function was detected in the right sternocleidomastoid muscle or during right shoulder elevation. Radiographic examination produced no relevant findings. We next performed electromyography (EMG), the likely diagnosis being an injury to the right accessory nerve. The needle EMG was consistent with an almost completely regenerated upper portion of the trapezius muscle compared with an almost completely regenerated upper portion of the trapezius muscle. EMG often showing an increase in polyphasic waves and decreased recruitment. Ultrastructure has recently been proposed as an adjunct in the diagnosis. Because of untoward consequences in chronic cases, surgery is recommended if patients fail to improve after one year of conservative treatment. 

We consider this case to be noteworthy in certain aspects: the patient did not present with a trapezius palsy; it was a late silent physical finding that we uncovered. Secondly, as in a few of the cases in the above series, only the upper trapezius atrophy was present which did not preclude a compound shoulder function. This is usually because there are other innervation sources or because of the presence of a divided accessory nerve. Thirdly, we believe that this case implies the likelihood of a relatively benign course in younger patients. Lastly, together with another case report of a wrestler, the possibility of this type of injury occurring during sporting activity is highlighted. We therefore alert sports physicians to such a clinical scenario, for which prompt evaluation and management should always be the prerequisite.

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Applying elite research to the general population

We are writing in response to the letter by Dr Webborn about our circadian research on competition swimmers. His first comment, namely that the media may wrongly slant a “take home message”, is understandable. Had we read our message in chronic more carefully, we would have seen that we noted our observation—that there is a morning lowering of IgA and an increase in cortisol—“might be acceptable to elite competitors”. What we strongly queried is considering that early morning sessions should: “perhaps be avoided by those returning to training after injury or illness, those close to periods of important competition (which are more associated with the underperformance syndrome) and possibly those at altitude, which itself imposes a degree of immunosuppression.” All very carefully displayed in the take home message. We three authors have been involved in the preparation of elite competitors collectively for many years, and we stand by those cautionary statements.

Dr Webborn is, importantly, interested in the potential health benefits of recreational exercise to an “active population”, and makes certain valid points that trivial risks of illness, as might be investigated in elite athletes, should not deflect exercise for the vastly greater public good. However, our work was concerned with well trained competition swimmers, a point that we emphasised to the media. A major thrust of sports medicine is that it sometimes looks at clinically trivial conditions—for example, ankle or wrist sprains—which may be anything but trivial to the sports competitor. More specifically, modest levels of weekly exercise may be immunoenhancing, whereas there is much evidence that elite levels of endurance training may be immunosuppressive, so one always has to be careful which message applies to which group. In his second comment, Dr Webborn reasonably queries the hydration status of our subjects. Naturally, on working with salivary flow, we had considered this also, in terms of subject behaviour at 24, 12, and 8 hours before testing, as is indicated in our experimental design. There were no “dry mouths”.

However, overall, Dr Webborn has a possible point about media misuse of take home messages, and perhaps the editorial board could discuss this, if it is felt to be an issue.

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Editor’s response

The role of the Journal’s “take home message” had been under review for some time before this correspondence. It has already been decided that it will be changed to a high-lighted box encapsulating “what is known about the topic” and “what this paper adds to the body of knowledge”. This will be similar to the current layout in the British Medical Journal, and our technical editors have been developing a format to suit the Journal style. This correspondence has simply highlighted an important consideration of the Journal, namely how we deal with the media in a clear, concise, and appropriate way.

Response to “Berger in retrospect: effect of varied weight training programmes on strength”

I would not have believed in 1962 that my study would have created such a brouhaha in
the 21st century. Dr Carpinelli’s paper credits my study as “the genesis of the unsubstantiated belief that multiple sets are required for optimal gains in strength”. His opinion is complimentary in one respect, but I cannot take full credit for it. Most professionals in the field, and even those who trained and therapy have added credence and support to these words by employing multiple sets in their practice and research. In my opinion, most professionals train others with multiple sets because they have experientially discovered that multiple sets are more effective than one set. Some early research studies have compared different weight training programmes, but in practice, multiple sets were used in training.1 2 I am hardly the “genesis” of an “unsubstantiated belief”. Historically the medical applications of strength training for therapy involve multiple sets. One set is the exception. So Berger is not as one “crying in the desert”. There are many more therapists and coaches flinging down the gauntlet in support of multiple sets.

The probability level of 0.05, which academicians hold so sacred in decision making, does not always supersede in importance common sense when considering the difficulties in exponentially attempting to control numerous factors in strength research. One research problem is finding subjects who have, preferably, no experience in weight training and who are able to train for long periods of time, 12 weeks, under controlled conditions. If I had concluded in my study in 1962 that one set was as good as multiple sets, I would have had more than just Dr Carpinelli voicing criticism of my paper. The practitioners of a craft who have confirmed my 1962 findings would have confirmed my 1962 years ago to express their disagreement and would not have waited 40 years to do so. A person who comes to my mind as one such adherent is A. Arthur Jones, the developer of the Nautilus machine. To my knowledge, he has never presented any acceptable scientific evidence supporting his belief. Furthermore, he has few adherents today of his training views, although one adherent is obvious. Of the 85 references in Dr Carpinelli’s paper, Mr Jones authored not one. Certainly his contribution to the body of knowledge in strength training should be acknowledged, if deserving.

I decided to deal with a limited amount of “evidence” in defence of my study. But I must preface my remarks by assuring the readers that my paper was reviewed by several researchers at the time of acceptance and approved by them for publication. The conclusions I drew were substantiated and accepted by them. For Dr Carpinelli to refer to my study as the “genesis of the unsubstantiated belief…” is an affront to the opinions of these reviewers.

The data in tables 1, 2, and 3 of Dr Carpinelli’s paper, which were used to critique my study, were appropriately used according to an acceptable statistical protocol. Comparisons between subgroups 1-2, I-III, 6-6, etc were not valid for critiquing my study. When a factorial design is used, as in my study, and no significant interaction is found between factors of sets and repetitions, then the only legitimate analysis to make is on main effects—that is, comparisons among sets 1, 2, and 3 across all levels of sets. When this was done, significant differences were found, with three sets and six reps resulting in the greatest improvement. I spoke to Dr Carpinelli earlier (1998 communication) about his misuse of statistics and suggested he consult a statistician. If this had been done, there would not have been a critique of my study, nor a need for one. I must admit, though, that I made the same mistake as Dr Carpinelli in my study. In table 4 of my study, I erroneously made comparisons among subgroups of sets and repetitions. However, as a neophyte in 1962 I accept the blame. Being wiser today than 40 years ago, and even considering Dr Carpinelli’s critique, I unequivocally support the thesis that multiple sets over single sets for optimising strength. I would suggest to Dr Carpinelli that he conduct research of his own in the hope of gaining support for his position. If his zealfulness, which is commendable, were redirected to researching rather than to criticising old studies, his academic contributions would be more fruitful.

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References

Will the new field hockey rules lead to more injuries?

On 1 January 2003, the International Hockey Federation introduced a mandatory experimental amendment to the rules pertaining to the taking of short corners. The new rule now reads: “Penalty corner; no shot at goal; the ball must have travelled outside the circle.” This change means it will no longer be possible to score a goal when taking a shot at goal as was previously the case. The reason given for introducing the rule was to “simplify the game without altering the overall nature of which is unique to hockey”. Short corners present a good opportunity to score a goal and are practiced routinely in training. The new ruling was introduced on 1 March 2003 by the Ulster Branch of the Irish Hockey Association in whose leagues I play. I have now played three games under the new ruling, and the danger of this rule has been brought sharply into focus. In two of the three games, players required hospital attention because of knee and ankle injuries as a result of defending the goal巴拉巴拉
books, unpublished reports, or publications in obscure journals. This was disappointing. In fact in chapter 4, “Healing by intention: a research-based overview”, any references to trials of this form of healing were in other than mainstream medical journals. This form of referencing makes a fair assessment of the evidence frustratingly difficult.

This book is useful mainly as an introduction to the very theoretical but generally very poorly researched field of complementary therapies in physical therapy. The basic problem is that it is heavy on theory, mainly unsubstantiated, and light on evidence of efficacy. It did not convince me to recommend the majority of the therapies to my patients.

More positively, this book is well written and easy to read. I clearly learned much about the subject matter, the validity of much of which I found questionable. However, it would be useful in educating physical therapists about treatments that they may be asked about or choose to trial. As it appears to be the only book of its kind, it should be held as a reference text at institutions involved in the teaching of physical therapies.

Analysis
Presentation 16/20
Comprehensiveness 17/20
Readability 15/20
Relevance 6/20
Evidence basis 3/20
Total 57/100

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Science for exercise and sport

The basic scientific principles and working techniques relevant for science in the field of exercise physiology and exercise and sport sciences are described in this book. It is written for undergraduate students with minimal or no experience and knowledge in science.

The book is divided into three sections. The first section covers the physical states of gas, liquid, and solid. The second explains forces, energy, and electricity. The third addresses data analysis and report writing. Each chapter starts with a list of learning objectives, a short introduction which highlights the relevance for sports and exercise, so called “action points” enable the reader to check the learning success. A conclusion briefly summarises the take away message, and “key points” condense the latter to its essence. Each chapter is completed with a list of references, but also examples of additional recommended literature for further reading.

In general, the structure of the book is systematic, consistent, and in principle helpful, and the content covers a thorough portfolio of knowledge which is relevant for a successful start in experimental sport and exercise science. Nevertheless, it remains rather dry and although the book would really attract the attention of the targeted readership. It is much too text dominated. This weakens the impact of adequate wording and the provided examples of application and scientific transfer. Most of the figures and flow charts are of poor quality. It also remains questionable whether detailed descriptions of the personal computer, software, and the internet are really necessary nowadays. In general, the layout of the book appears somewhat deterrent compared with modern text books.

In conclusion, this book is well structured with mostly convincing content but a rather suboptimal layout. After thorough revision of the layout and minor aspects of content, it has the potential to improve from one of many more or less adequate handbooks to a very good tool which not only meets the requirements with respect to learning objectives but also to an adequate presentation to the targeted readership.

Analysis
Presentation 8/20
Comprehensiveness 15/20
Readability 11/20
Relevance 15/20
Evidence basis 18/20
Total 67/100

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The Cutting Edge: Joint Conference of The British Association of Sport and Exercise Sciences and The British Association of Sport and Exercise Medicine in association with the National Sports Medicine Institute
3–7 September 2003, Sheffield
Further details: R.M. Bartlett. Email: t.m.barlett@shu.ac.uk

Football Australasia Conference
23–25 September 2003, Melbourne, Australia
Further details: Football Australasia Conference, PO. Box 235, North Balwyn, Victoria 3104, Australia

Congress for Science and Medicine in Cricket
25–26 September 2003, Loughborough, UK
Further details: Julie Page, ECB. Tel: +44 (0)207 432 1261; email: julie.page@ecb.co.uk

Congress of Sports Medicine of the AZ Sint-Jan AV
24–25 October 2003, Bruges, Belgium
Further details: Congress Centre, OUD SINT- JIN, Mariastaat 38, B-8000, Brugge, Belgium; email: bruicosport@azbrugge.be; website: www.bruicosport.be

International Conference on the Science and Practice of Rugby
5–7 November 2003, Brisbane, Australia
Further details: Kerry Williams, Conference Organiser, QUT, GPO Box 2434, Brisbane, QLD 4001, Australia. Tel: +61 7 3864 2220; fax: +61 7 3864 5160; website: www.rugbystudies.com/conference

The Fifth International Conference on Sport, Leisure and Ergonomics
19–21 November 2003, Burton, Cheshire, UK
A three day conference in affiliation with the Ergonomics Society.
Further details: Congress Secretariat, Sport, Leisure and Ergonomics, Research Institute for Sport and Exercise Sciences, Liverpool John Moores University, Henry Cotton Campus, 15–21 Webster Street, Liverpool L3 2ET, UK. Tel: +44 (0)151 231 4088; email: K.George@livjm.ac.uk

Medicare India
6–8 April 2004, New Delhi, India
This exhibition and conference will be held for the first time, following India’s ambitious “health for all” programme launched in 2002.
Further details: Rob Grant, Kinex Log, 5 New Pus, 15–21 Webster Street, Liverpool L3 2ET, UK. Tel: +44 (0)207 723 8020; fax: +44 (0)207 723 8060; email: rob.grant@kinexlog.com; website: www.medicare-expo.com and www.kinem.png.com
The 6th STMS World Congress on Medicine and Science in Tennis in conjunction with the LTA 2004 Sports Science, Sports Medicine and Performance Coaching Conference


Keynote speakers include Professor Per Rensstrom (SWE), Professor Peter Jokl (USA), Professor Savio Woo (USA), Dr Carol Otis (USA), Dr Mark Safran (USA), Dr Ben Kibler (USA), Prof Bruce Elliott (AUS), and Professor Ron Maughan (UK).

Further details: Dr Michael Turner, The Lawn Tennis Association, The Queen's Club, London W14 9EG, UK. Email: michael.turner@LTA.org.uk

Intercollegiate Academic Board of Sport and Exercise Medicine Diploma Exam

The following were successful diplomates in the Intercollegiate Academic Board of Sport and Exercise Medicine Diploma Exam, the two exams held in 2001 and 2002:

- Dr Andrew J Adair
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- Dr Sinead M Armstrong
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- Dr Susan J Brick
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- Dr Michelle Jeffrey
- Mr S P Kale
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- Dr Martin O Rochford
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- Dr Aravinthan Suppiah
- Dr James A Thomas

For further information contact: Mrs Yvonne Gilbert, Administrative Secretary, Intercollegiate Academic Board of Sport and Exercise Medicine, Royal College of Surgeons of Edinburgh, Nicholson Street, Edinburgh EH8 9DW, UK; tel: +44 (0)131 527 3409; email: y.gilbert@rcsed.ac.uk

Intercollegiate Academic Board of Sport and Exercise Medicine

Professor Donald Macleod has completed his four year term as Chairman of the Intercollegiate Academic Board of Sport and Exercise Medicine. Professor Charles Galasko has been elected by the IABSEM Board to replace him. Professor Macleod has also been replaced as the representative of the Royal College of Surgeons of Edinburgh on IABSEM by Professor Angus Wallace.

Winners of the annual BASEM Prizes

Dr Eileen Mackie (Clodipodreg inhibits platelet activation and exercise induced ischaemia in stable coronary artery disease) and Mrs Eleanor Curry (Role of exercise in multiple sclerosis) (joint winners).

The poster prize was won by Dr Stuart Reid (Injury patterns and injury prevention strategies in the winter sports population) attending the English medical centre in Val D’Isere.

Diploma in Sport and Exercise Medicine for Great Britain and Ireland

Details for the above exam can be found on the Royal College of Surgeons of Edinburgh Website at http://www.rcsed.ac.uk alternative applicants can write to: The Royal College of Surgeons of Edinburgh, Eligibilities Section, Careers Information Services, 3 Hill Place, Edinburgh, UK; tel: +44 (0)131 668 9222 or Mrs Yvonne Gilbert, Intercollegiate Academic Board for Sport and Exercise Medicine, Royal College of Surgeons of Edinburgh, Nicholson Street, Edinburgh EH8 9DW, UK; tel: +44 (0)131 527 3409; email: y.gilbert@rcsed.ac.uk

www.rcsed.ac.uk

The British Association of Sport and Exercise Medicine has launched its new website—www.basem.co.uk. The site provides information about the educational opportunities in sport and exercise medicine and advice to those wishing to become involved in this area.

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NCPAD NEWS

A monthly publication of the National Center on Physical Activity and Disability. NCPAD is the leading source for information about organisations, programmes, and facilities nationwide providing accessible physical activity and recreation. NCPAD also has a large and growing online library of fact sheets, monographs, and contact information on physical activity and recreation for people with disabilities.

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Will the new field hockey rules lead to more injuries?

Mark A Tully

Br J Sports Med 2003 37: 373
doi: 10.1136/bjsm.37.4.373

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