NSCA National Conference Research Abstract Submission & Presentation Guidelines

2018

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General Information
The National Strength and Conditioning Association (NSCA) is pleased to make a call for research abstract submissions for presentation at the 2018 National Conference. Research abstract presentations are an opportunity to present current research findings to researchers and strength and conditioning professionals at the NSCA National Conference. The research abstracts are the largest portion of the scientific programs presented every year at the National Conference. The NSCA encourages all researchers and NSCA students to submit their abstracts for consideration to the 2018 NSCA National Conference.

Submission Deadline
The abstract submission deadline is **March 1, 2018**.

Notification
Submitting authors will receive notification of acceptance or rejection of their research abstract by **May 1, 2018**. If you do not receive notification by May 1, please contact abstracts@nsca.com.

Language
All abstracts must be written in English.

Cost
There is no cost to submit an abstract, but due to costs incurred by the NSCA, all accepted abstracts are expected to be presented.

Presentation Format
Research abstracts can be presented in either a podium or poster. Due to a limited number of available podium presentations, all requests for podium presentations cannot be accommodated.

Presentation Dates
Podium and poster presentations occur on all three days of the conference (Thursday, July 12; Friday, July 13; and Saturday, July 14). Podium presentations typically occur in the morning with poster presentations occurring over lunch with a second session in the afternoon.

Publication of Abstracts
All accepted abstracts will be published online. The printed program book is no longer offered.

Accepted abstracts, that are presented, will be published as an electronic supplement to the *Journal of Strength and Conditioning Research (date to be determined).* The NSCA encourages all research abstract presenters to submit the completed manuscript of their presented research for consideration in the *Journal of Strength and Conditioning Research.*

Research Abstract Submission Guidelines

- Abstracts must be original works that are unpublished.
- Do not submit abstracts containing data currently in press. In the event that data contained in an accepted abstract is published (paper, electronic, or other format) prior to the abstract's submission to the National Conference, the abstract will be withdrawn.
- The first author of the research abstract is considered the *primary author* and must present the abstract. However, all authors must approve the abstract prior to submission.
- The *submitting author* is the author who submits the abstract. All correspondence regarding abstract presentation status and presentation type and time will be with the submitting author.
- One person may be the primary author on a maximum of two abstracts (only one may be submitted as a podium presentation).
- All abstract presenters must pay for their conference registration and all other fees associated with travel. Conference registration fee is separate from abstract submission fee.
- Abstracts may only be submitted online.
- For questions, please e-mail the NSCA at abstracts@nsca.com.

Subject Categories

There are eleven (11) available categories for research abstracts:

1. Biochemistry / Endocrinology
2. Biomechanics / Neuromuscular
3. Body Composition
4. Endurance Training / Cardiorespiratory
5. Fitness / Health
6. Flexibility / Stretching
7. Nutrition / Ergogenic Aids
8. Resistance Training / Periodization
9. Special Populations
10. Speed / Power Development
11. Tactical Strength and Conditioning

Use of Human and Animal Subjects

All research studies that include data recorded from human participants must comply with the Declaration of Helsinki and the US Department of Health and Human Services Policy for the Protection of Human Research Subjects (US Code, Title 45, Part 46 Protection of Human Subjects). All animal studies must comply with the Public Health Service Policy on Humane Care and Use of Laboratory Animals.

Abstract Formatting Specifications

- All abstract submissions must be formatted correctly (see examples below) and include original research-based data to allow for a thorough review. Abstracts that do not meet these criteria will not be accepted.
- The body of the abstract cannot exceed 3,500 characters (including spaces) when there is no figure or table included. When there is a figure or table associated with the abstract, the text cannot exceed 3,000 characters (including spaces).

Figures and Tables

- Abstracts can contain either one figure or one table, but not both. Abstracts submitted with more than one figure or table will have both images removed.
- Any figure or table must pertain to the abstract for the purpose of visualizing data and must be referred to in the text of the abstract. Graphs or tables that do not pertain to the abstract will be removed.
- Figures or tables must be concise. It is at the discretion of the NSCA if a graph or table is too big, and if so, it will be removed. Additional text that should be in the abstract may not be substituted in the graph or table.
- The resolution of the figure or table must be adequate for reprinting (i.e., = 150 dpi).
- Including a figure or table does not replace any of the required sections (i.e., Purpose, Methods, Results, etc.).
- No photos or pictures are allowed – only a graph or a table.
- The graph or table must be an image file (.jpg, .gif, .png are accepted). PDF and PowerPoint are not acceptable.

Required Information

- Abstracts/submissions must contain the following:
  - Title (typed in ALL CAPS) cannot exceed 150 characters (including spaces).
  - Language: English
  - Short title cannot exceed 10 words.
  - Purpose, methods, results, conclusions, and practical applications. Acknowledgements should be included to denote funding sources or conflicts of interest when applicable.
- Abstracts/submissions cannot contain the following:
  - Brand names.
  - Advertising. Research abstracts should be non-biased, free from solicitations, and should not contain demonstrations of products for the purpose of sales.
  - Author(s) degrees (MS, PhD, etc) or credentials (CSCS, FNSCA, etc).
- The following information will be asked during the submission process:
  - All authors' names.
    - If the primary/ presenting author is submitting for award consideration, they must be an NSCA Member (professional or student).
  - All authors' primary institutions/ laboratories (institution/ laboratory name, city, state).
  - All authors' professional mailing address, e-mail address, and phone number.
  - Desired presentation format (i.e., podium or poster).
    - Due to limited availability, not all podium requests can be accommodated.
  - Abstract subject category.
  - If the abstract is being considered for a Student Research Award (see below).

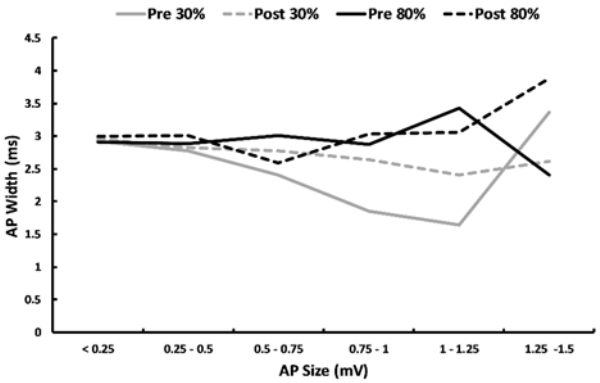
Example Abstract with Graph or Table
2017 Doctoral Student Outstanding Poster Presentation (co-winner)

CHANGES IN MOTOR UNIT ACTION POTENTIAL MORPHOLOGY FROM HIGH- AND LOW-LOAD RESISTANCE EXERCISE TO FAILURE

R. Colquhoun, M. Magrini, C. Estrada, J. Hernandez Sarabia, T. Muddle, N. Jenkins, J. DeFreitas
Oklahoma State University

Introduction: Numerous recent investigations have examined the effects of high- versus low-load resistance training on skeletal muscle hypertrophy and strength. However, to date, no study has examined the potential changes in motor unit (MU) action potential (AP) morphology following either of these conditions. AP morphology has been utilized as a measure of fatigue as well as MU size. While AP size remains relatively stable, AP width elongates as a results of fatigue, most likely due to the disruption at the sarcolemma. This elongation, in turn, slows conduction velocity along the sarcolemma. **PURPOSE:** To examine the action potential morphology following high- and low-load resistance exercise to failure in the back squat exercise. **METHODS:** 14 resistance-trained men (Age: 23 ± 3 years; Mass: 86.4 ± 11.1 kg; Squat 1RM: 160.3 ± 31.9 kg) participated in this randomized, cross-over study. Participants completed the back squat exercise in 3 sessions, each separated by approximately 7 days. The first session consisted of 1RM testing, while the second and third sessions were randomized to include either 3 sets to failure at 30% or 80% 1RM. Prior to and immediately following each condition, participants completed a maximal voluntary isometric contraction) with a specialized 5-pin sensor placed over their vastus lateralis, allowing for the acquisition of four electromyographic signals. These signals were decomposed into their constituent MU AP trains and the relationship between AP size and AP width was examined following each condition. A 3×2 (Condition × Time) repeated measures ANOVA was run to examine the changes in slopes between conditions. Post hoc analyses included paired samples t-tests to further examine significant interactions. **RESULTS:** The results of the ANOVA showed a significant interaction for the slope coefficient of AP size by AP width ($p = 0.028$). Further analysis revealed a significantly longer AP width following the 30% condition (2.87 ± 1.0 ms) compared to baseline (2.79 ± 1.1 ms; $p = 0.014$). Visual inspection of the figure below reveals that the AP width of the smallest MUs did not change, and it was the APs of the medium sized MUs that got wider with fatigue at 30% 1RM. No additional significant changes were observed. **CONCLUSIONS:** Low-load resistance exercise to failure appears to alter sarcolemma conduction to a greater degree than high-load failure. This is evidenced by a significantly increased AP width, especially of the medium-sized MUs, following the low-load condition, with no change in AP width following the high-load condition. **PRACTICAL APPLICATION:** The results of this investigation suggest that high- and low-load resistance exercise to failure have different fatiguing effects on sarcolemma conduction. While significantly more evidence is still needed, it is possible that performing low loads to failure eventually recruits and adequately fatigues larger MUs, despite their inactivity at the onset of the exercise.

AP Width vs. AP Size

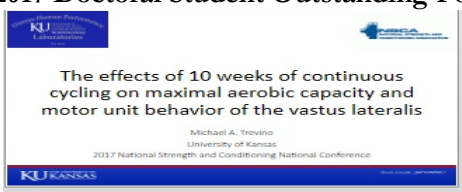


The figure outlines the changes in AP width based on AP size pre and post high- and low-load resistance exercise to failure.

Podium Abstract Presentation Guidelines

- All podium abstract presentations must be prepared in Microsoft PowerPoint.
- All presenters are asked to bring their presentation (.ppt or .pptx) to the conference on a USB flash/jump drive, CD, or their own personal laptop.
- Presenters are asked to load their presentations onto the laptop (provided by the NSCA) and ensure the presentation displays properly **before 8:30 AM on the day of the presentation**
- All presenters should check in with their session's moderator prior to presenting
    - Moderators are assigned in 1-hour blocks (i.e., 9:00-10:00 AM, 10:00-11:00 AM, and 11:00-12:00 PM). So, for example, those who are scheduled to present between 10:00-11:00 AM should check-in with their moderator before 10:00 AM.
- Podium abstract presentations must be consistent with the contents of the accepted abstract: including an introduction, methods, results, conclusion, and practical applications section.
- Podium presentations are 10-12 minutes in duration with 3-5 minutes of questions from the audience and responses from the presenter.

Example Podium Presentation
2017 Doctoral Student Outstanding Podium Presentation



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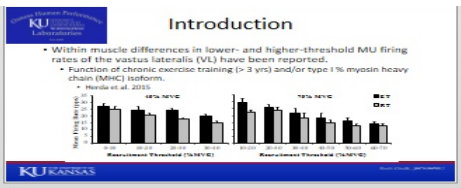

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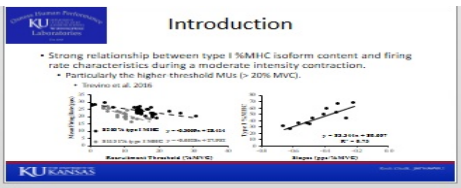

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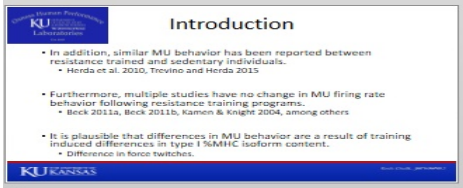

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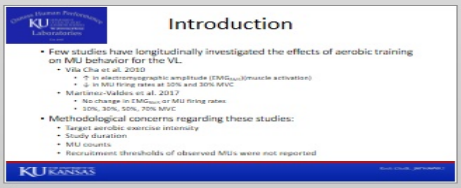

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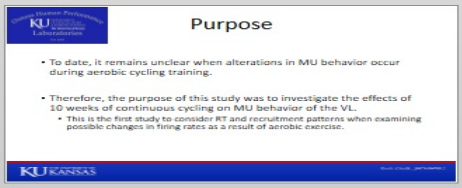

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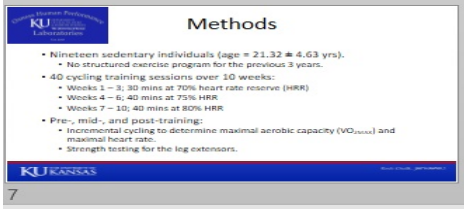

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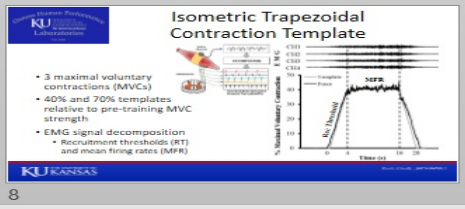

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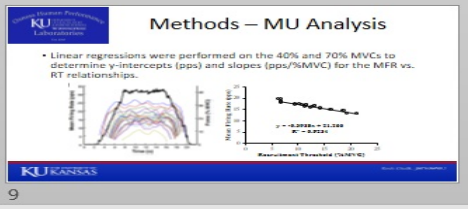

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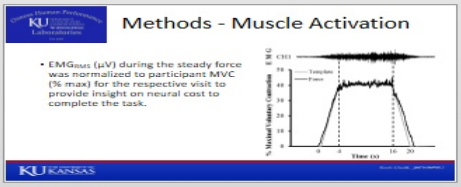

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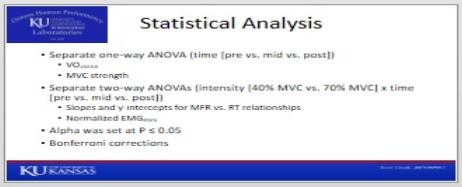

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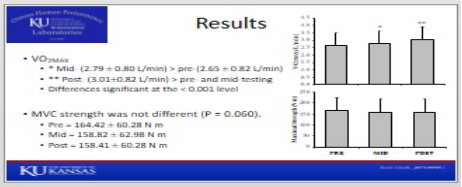

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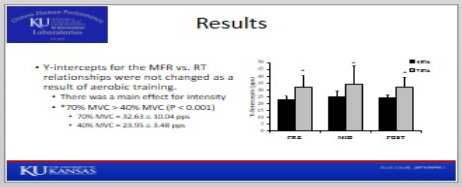

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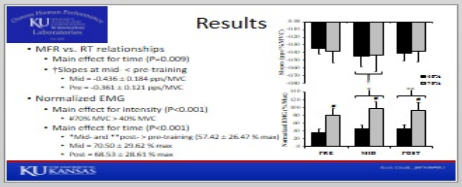

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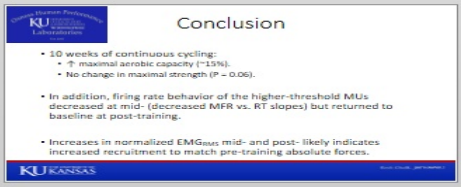

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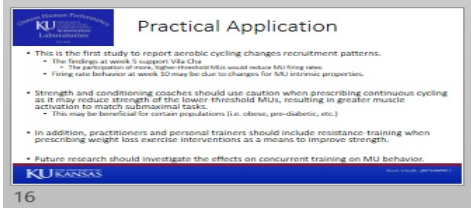

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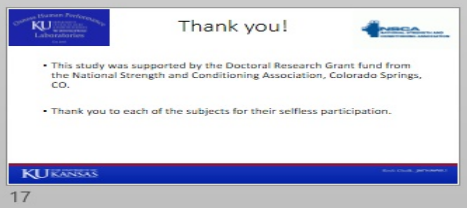

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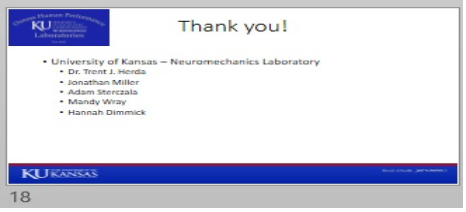

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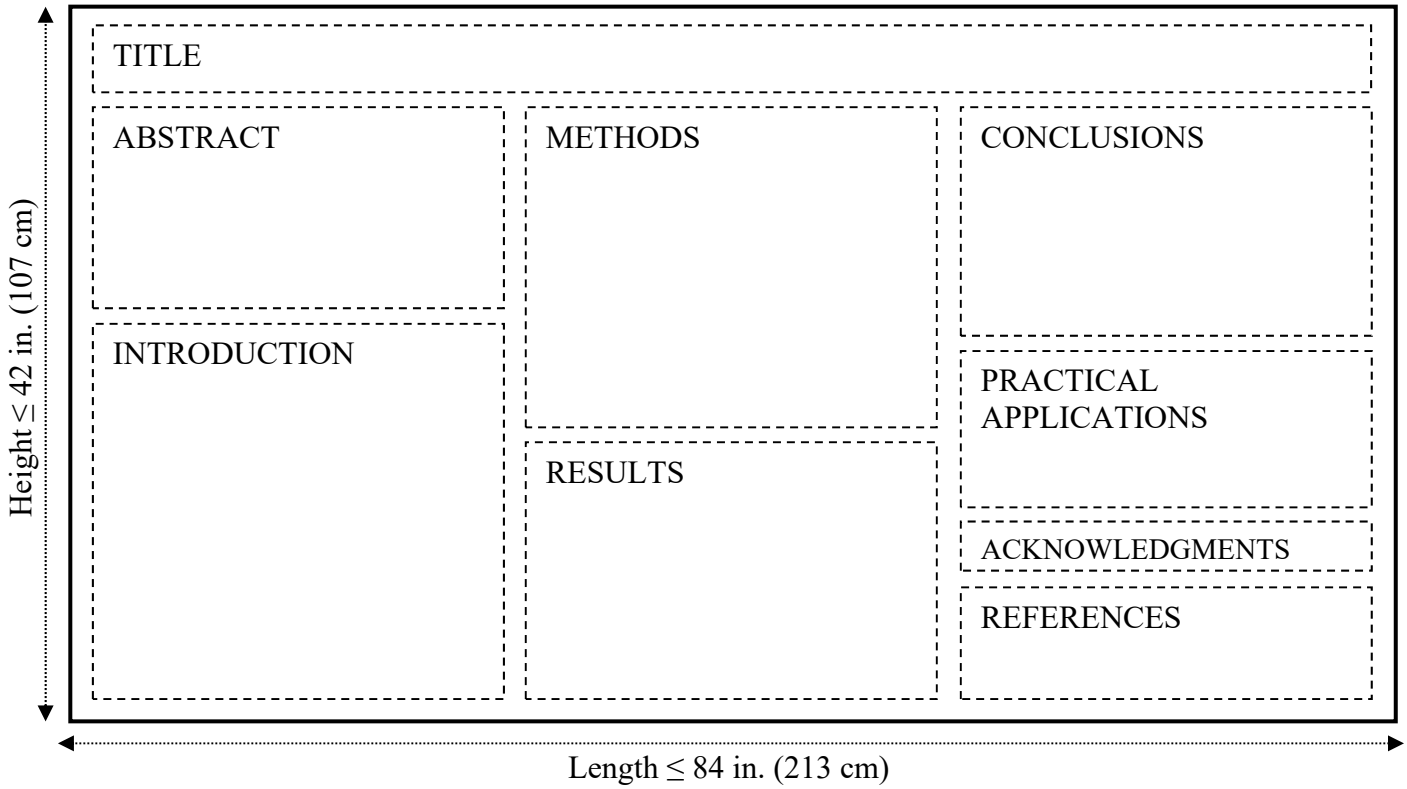
Poster Abstract Presentation Guidelines

- All poster presentations should be printed on one uniform poster sheet with dimensions not exceeding 42 × 84 in (107 × 213 cm) (height X width). Unless otherwise noted, the poster boards on which the posters are hung are 48 × 96 in. (122 × 244 cm).
- Presenters are required to supply their own thumb tacks by which to hang their posters.
- Poster abstract presentations must be consistent with the contents of the accepted abstract: including an introduction, methods, results, conclusion, and practical applications section.
- The Research Committee recommends the following layout as a general guideline for all poster presentations:



Example Poster Presentation
2017 Doctoral Student Outstanding Poster Presentation (co-winner)

THE UNIVERSITY OF ALABAMA KINESIOLOGY

Tracking Changes in Aerobic Fitness with the Pacer Test in Youth Soccer Players Across a Competitive Season

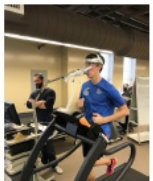
Colin G. Pennington, Zackary Cicone, Clifton Holmes, Oleg Sinelnikov, Michael R. Esco
The University of Alabama, Tuscaloosa, AL

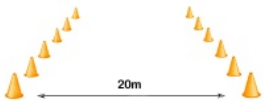
Introduction & Purpose

- Research indicates that performance in soccer depends on various physical qualities and technical skills as import factors affecting performance (1). Past studies demonstrate that particularly relevant physical capabilities relative to soccer performance include aerobic endurance, anaerobic power, and running speed –which, when developed, help to produce higher performance in athletes (1-7).
- Accurate assessment of aerobic fitness involves expensive equipment for profiling the metabolic response to graded exercise testing, which is typically performed in laboratory settings. The Pacer test is often used as a surrogate of laboratory testing for aerobic fitness in field settings. However, the ability of the Pacer test to accurately track changes in aerobic fitness in youth soccer players is limited.
- Previous research has used field-based assessments to explore changes in agility, body composition, flexibility, anaerobic power and aerobic endurance pre-season and post-season in male, elite soccer players (1-3). Field tests are considered a preferable alternative to laboratory tests for the assessment of aerobic fitness in team sports such as soccer (4). Studies of this nature have found that increased soccer performance is shown with increasing aerobic conditioning (1-3,6). However, statistical differences have been found to more often exist only in anaerobic power performance variables, rather than aerobic conditioning performance. In some cases, decreases in aerobic conditioning were observed at the conclusion of a competitive season (8). Such trends suggest the demands of pre-season training to develop fitness are more vigorous than actual game play.
- Fewer studies have explored performance and conditioning changes across a competitive season of play in youth soccer players using both field-based and laboratory-based performance assessments. Therefore, the purpose of this study is to determine if changes in the Pacer test is related to changes in aerobic fitness following a competitive season in youth soccer players.

Methods

- Ten youth soccer players (age range = 13 – 15 years, height = 169.8 ± 11.40 cm, weight = 56.59 ± 9.88 kg) participated in this study.
- Each athlete performed a graded exercise test to determine peak oxygen consumption (VO_{2peak}) in a laboratory with a calibrated metabolic cart and treadmill.
- Two days following the VO_{2peak} test, each athlete performed the 20-meter Pacer test on a soccer field.





- Testing was performed at baseline and 1-week after the end of the 16-week competitive soccer season.

Results

Table 1. Baseline versus post-season results for the Pacer test and VO_{2peak}.

	PACER			VO_{2peak}		
	Baseline	Post	Difference	Baseline	Post	Difference
Participant 1	1200	1400	200	51.4	54.3	2.9
Participant 2	1240	1800	560	50.6	54.7	4.1
Participant 3	1260	2140	880	51.2	61.3	10.1
Participant 4	1840	2240	400	58.7	58.5	-0.2
Participant 5	2100	1980	-120	58.4	56.0	-2.4
Participant 6	1600	1800	200	58.5	53.4	-3.1
Participant 7	1640	1820	180	59.6	61.0	1.4
Participant 8	1260	1060	-200	46.1	40.1	-6.0
Participant 9	1660	1680	20	61.8	58.7	-3.1
Participant 10	1280	1800	520	54.4	52.3	-2.1
Mean	1508	1772	264	55.1	55.2	0.2
SD	308	343	331	5.1	6.1	4.6
p			0.03		0.92	
ES			0.84		0.03	

SD = Standard deviation, p = Level of significance, ES = Effect size determined from Cohen's d.

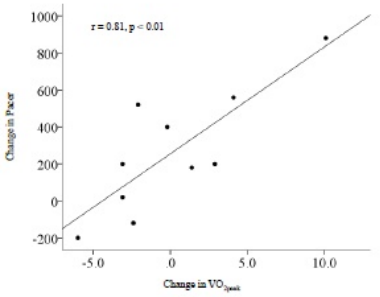


Figure 1. Scatter plot of the relationship between the change in Pacer and change in VO_{2peak}.

Conclusion

- The soccer season initiated a mean increase in Pacer scores, while no significant group difference in VO_{2peak} was found.
- However, individual responses were demonstrated following the competitive season in the field test and laboratory assessment of aerobic fitness as increases, decreases, or no changes were found in both metrics across the sample of athletes.
- The individual patterns of variance in each assessment were related, as a strong correlation was found in the baseline-to-post differences in Pacer and VO_{2peak} responses.
- This finding indicates that the Pacer test is an appropriate field method to track changes in aerobic fitness that would be shown with a laboratory assessment of VO_{2peak}.
- Therefore, unless precise "Gold Standard" measures of aerobic fitness are needed, the Pacer test appears to be a valid surrogate to the expensive and often inconvenient laboratory method for testing youth athletes.
- Further research is needed involving a larger sample of athletes to corroborate the findings of this pilot study.

Practical Application

- To better design fitness training programs, it is important to understand which physiological qualities best correlate with soccer-related performance.
- However, precise measures of fitness testing often involve laboratory methods that are not easily accessible to practitioners and would not be of convenient use in youth athletes.
- Many field-based tests of fitness parameters offer accurate alternatives to laboratory-derived measures, while possessing high ecologic validity.
- Based on the findings of this study, the Pacer test appears to be a suitable field assessment for reflecting changes in aerobic fitness in youth soccer players.
- Therefore, practitioners should consider periodically utilizing the test for monitoring changes in aerobic fitness among young athletes.

References

1. Caldwell, B. P., & Peters, D. M. (2009). Seasonal variation in physiological fitness of a semiprofessional soccer team. *J Strength Cond Res*, *23*(5), 1370-1377.
2. Castagna, C., Impellizzeri, F. M., Manzi, V., & Ditroilo, M. (2010). The assessment of maximal aerobic power with the multistage fitness test in young women soccer players. *J Strength Cond Res*, *24*(6), 1488-1494.
3. da Silva, J. F., Guglielmo, L. G., & Bishop, D. (2010). Relationship between different measures of aerobic fitness and repeated-sprint ability in elite soccer players. *J Strength Cond Res*, *24*(8), 2115-2121.
4. Helgerud, J., Engen, L. C., Wisloff, U., & Hoff, J. (2001). Aerobic endurance training improves soccer performance. *Med Science Sports Exerc*, *33*(11), 1925-1931.
5. Polman, R., Walsh, D., Bloomfield, J., & Nesti, M. (2004). Effective conditioning of female soccer players. *J Sports Sci*, *22*(2), 191-203.
6. Reilly, T. (2003). *Science and soccer*. Routledge.
7. Tonnessen, E., Shalfawi, S. A., Haugen, T., & Enoksen, E. (2011). The effect of 40-m repeated sprint training on maximum sprinting speed, repeated sprint speed endurance, vertical jump, and aerobic capacity in young elite male soccer players. *J Strength Cond Res*, *25*(9), 2364-2370.
8. Esco MR, Flatt AA, Nakamura FY (2016) Initial weekly HRV response is related to the prospective change in VO_{2max} in female soccer players. *Int J Sports Med*, 37(6) 436-441.

Abstract Review Process
The Scientific Programs Subcommittee is responsible for reviewing the NSCA Research Abstracts to assure that the correct formatting has been applied and to solicit blinded external review(s) for scientific content. Abstracts that do not meet the previously stated formatting criteria will be rejected. The Scientific Programs Subcommittee may solicit a blinded external review. The abstract may be externally reviewed by two reviewers for scientific content, appropriate methodology, correct statistical analysis, proper interpretation of results, and contribution to the field of strength and conditioning. In cases when both reviewers suggest an abstract be rejected or the reviewers do not agree on rejecting or accepting, the Scientific Programs Subcommittee will independently re-review the abstract in question. The Scientific Program Subcommittee will have final authority in this case to accept or reject the abstract.

Student Award Consideration
Any author who wishes to submit a research abstract for award consideration must be a Student or Professional Member of the NSCA at the time the abstract is submitted.

Student Research Award Description
The NSCA awards outstanding research efforts by students through the NSCA Student Research Awards. Five awards are given each year:

1. Doctoral Student Research Award for outstanding *podium* abstract presentation
2. Doctoral Student Research Award for outstanding *poster* abstract presentation
3. Master's Student Research Award for outstanding *podium* abstract presentation
4. Master's Student Research Award for outstanding *poster* abstract presentation
5. Undergraduate Student Research Award for outstanding *poster* abstract presentation

Preliminary Judging for Student Awards
The top ten (10) master's podium and top ten (10) doctoral podium submissions after the initial review period will be selected to be judged at the National Conference. The top ten (10) doctoral posters, top ten (10) master's posters, and top five (5) undergraduate posters after the initial review period will be selected to be judged at the National Conference.

Student Research Award Criteria:

- Each student award applicant must be a current Student or Professional NSCA Member at the time the abstract is submitted.
- The candidate must be enrolled as a full-time student at the time of abstract submission *or* have completed his/her degree no more than 1-year prior to the NSCA National Conference.
- The abstract and the online NSCA abstract form must be completed according to the required specifications (*see above*) and the "Student Award" option box must be checked.
- The presentation guidelines (either podium or poster) must be met as stated in this document.
- A student can be the primary author on a maximum of 2 abstracts; however, only 1 abstract can be eligible for the student award.
- Student award candidates must attend the NSCA National Conference to present their research.
- Winners will be announced at the NSCA Awards Banquet on the Friday evening of the conference, as well as through NSCA's social media channels.

Student Award Judging Criteria

Below are five (5) basic questions and additional sub-questions that are used by the judges to evaluate the student award candidates. Each question is answered with a Likert scale response on evaluation sheets, with spaces for judges' comments. The points are tallied and the comments are considered, narrowing the candidates for consideration. In the event of a tie, an overall subjective score provided by the judges from 1-100 will be considered.

1. Was the presentation knowledgeable and professional?
    a. For podium presentations – were the slides readable?
    b. For poster presentations – was the poster readable?
    c. How involved was the student with this project?
        i. Did the student provide well-informed responses to the questions?
        ii. How knowledgeable was the student about this project?
    d. How well did the authors follow the guidelines for abstract presentations (component parts)?
2. Was the introduction / literature review sufficient and relevant?
3. Was the study well designed?
    a. Was the purpose clearly stated?
    b. Did the methodology address the research question?
    c. Were the statistical procedures appropriate?
    d. Were the conclusions valid based on the results of the study?
4. What was the scientific impact of the research?
5. How well did the student *bridge the gap* with the practical application section?