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OPEN PEER REVIEW

Effects of Four Weeks of Concurrent Taekwondo Plus Resistance Training on Post-exercise Blood Biomarkers of Physiological Stress in Previously-Trained Individuals

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About this report

This open peer review (OPR) report shows the public comments made on this article during peer review, by the reviewers, the associate editor and the editor-in-chief, for every revision round, together with the authors' replies. Comments appear only with the consent of the people who wrote them. Reviewers who chose to sign their report are named; the others are shown as "Referee". Comments are edited for language only, and confidential remarks to the editors are not included.

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1 Original submission

1 comment · 8 Aug 2020

Mohamed SAID Reviewer

MAJOR REVISION 8 Aug 2020

General comment (originality, scientific accuracy, strengths and/or weaknesses): In my view, what the authors report is already known, so it has a low level of novelty, but the article still remains of interest for the contribution it adds to this research field. However, the manner in which this manuscript was presented, along with several other reservations, does not allow us to make a definitive judgment regarding its publication in the Asian Journal of Sports Medicine. Therefore, the authors are invited to clarify certain ambiguities and make some modifications that we consider of paramount importance in deciding whether to accept or reject this manuscript.

1. The manuscript could be improved in clarity if a native English speaker could help review it or if it could be sent to a proofreading service.

2. The introduction is too superficial. The authors should focus on the variables studied and their relationship with physical training and muscle damage. There is abundant literature in this field; the authors can use it to introduce the topic coherently and formulate a clear research problem. The study variables are hormones, enzymes, and metabolites that have different functions in the body (e.g., increased levels of testosterone after exercise may promote muscle building; however, a high level of cortisol can wreak havoc on the body and cause a number of unwanted symptoms). In my view, the authors should introduce these parameters and highlight their relationship with physical training separately.

3. In the 'Study Design' section, the authors should describe the overall strategy that they have chosen to integrate the different components of the study in a coherent and logical way. All stages of the study should be listed in chronological order.

4. In the 'Procedures' section, the authors stated, 'Blood samples were obtained pre- and post-experimentally ….…..… and stored at −80C. Testosterone, cortisol, lactate, glucose, creatine phosphokinase (sCPK), uric acid, and C-reactive protein (CRP) were analyzed using commercially available kits (Phoenix Peptides, 98Karlsruhe, Germany)'. This gives rise to several questions and calls for several explanations: At what time of day were the blood samples taken? This is very important due to the existence of diurnal cycles of cortisol levels in humans. Why was the blood stored? Were assessments made in serum, plasma, or whole blood? CRP was listed here but not included in the 'Results' section. The authors should explain all assessment methods (principle, materials, CVs) and cite the manufacturer and origin of each kit.

5. In the 'Intervention' section: '…..…..… 55-70% maximum heart rate (HRmax) for weeks 1-2 and 70 -85% HRmax for weeks 3-4.' In my view, the target intensity of 85% HRmax for previously trained individuals is not a moderate intensity. Please explain.

6. In my view, training individuals with different fitness levels at the same percentage of the theoretical HRmax is a mistake in applying training principles. Please explain.

7. Remark 6 is also applicable to resistance training: why did the authors not use the 1−RM tests to develop personalized training programs?

8. The authors should detail the TKD test protocol and explain how it was performed.

9. In the 'Statistics' section:

 Have the authors checked the data distributions for normality?

 Using a t-test several times generates a type 1 error. In addition, in such studies, what is more important are the changes that occurred after each test and at the end of the intervention. Thus, I invite the authors to determine the changes that arise after the tests conducted before and after training and to compare them using a two-way (group × time) repeated-measures ANOVA.

10. In the 'Results' section, tables should be revised carefully. 'N=6 in Tab 3'; 'Acute response to 20 minutes of

structured taekwondo. . ..' I didn't understand this; please explain. '. . .. . .. statistically significant between experiment and control group. . .. . .' Have the authors used a control group?

11. Lactate outcomes in female participants after testing were 3.7±2.3 and 4.3±2.5. This indicates that in some individuals the lactate accumulations were approximately 1.4 and 1.8 mmol / L, which is below the aerobic threshold. Please explain, given that the subjects were previously trained and the actions involved in TKD are characterized by periods of high levels of technical, tactical, psychological, physical fitness, and physiological characteristics.

12. One specific stressor known to drastically increase the circulating levels of cortisol in the human body is physical exercise. In general, exercise at or above 60% of the individual's maximal oxygen consumption (VO2max) produces a significant increase in circulating cortisol. However, in the present manuscript, cortisol levels decreased after the TKD test in both groups. It is unclear why this occurred. Do the authors have an explanation? [See: Guseman et al. Exercise and circulating Cortisol levels: The intensity threshold effect. Journal of endocrinological investigation 2008; 31(7):587-91. DOI: 10.1007/BF03345606]

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Revision 1

AUTHORS' RESPONSE TO REVIEWERS

Authors' reply to reviewers

The next pages contain the authors' point-by-point reply to the comments of this revision round, as submitted with the revised manuscript. It is published as the authors wrote it.

Effect of Concurrent Taekwondo and Resistance Training on Growth-Related Hormones: Implications for Musculoskeletal Injury Prevention

REVIEWER 1	
Reviewers' Comments	**Response**
More suitable title should be selected for the article. Title should decrease to 10-12 words.	Corrected on page 1
The abstract should state briefly the purpose of the research, the principal results and major conclusions. An abstract is often presented separately from the article, so it must be able to stand alone.	Corrected on page 2
The necessity and innovation of the article should be presented to the introduction.	Corrected on page 2
It is suggested to present the structure of the article at the end of the introduction.	Not corrected. Not in keeping with style of journal
A flowchart should be added to the article to show the research methodology.	CONSORT diagram added on page 4
The major defect of this study is the debate or Argument is not clear stated in the introduction session. Hence, the contribution is weak in this manuscript. I would suggest the author to enhance your theoretical discussion and arrives your debate or argument.	Corrected on pages 2-3
More suitable title should be selected for the figure 1 instead of “Illustration of the Bayesian framework. Perception begins…..”. That’s too long.	There was no figure in the manuscript
It is better to use brackets instead of parentheses for the references’ number in the text.	Corrected on page 7
Following, you will find some new related references which should be added to literature review: Hilton, D. J. Sports Monitoring with Moving Aerial Cameras Maybe Cost Efficient For Injury Prevention; Ettefagh et al. Position Control of a Flexible Joint via Explicit Model Predictive Control: An Experimental Implementation; Paranjape & Singhania. Effect of Body Positions on Quadriceps Angle Measurement.	These references do not apply to our study
Page 6: the following paragraph is unclear, so please reorganize that: “Uric acid too is recognized as a stress biomarker and a significant increase in uric acid concentration in all groups after the concurrent TKD and RT was observed in the HIG. Since uric acid has been identified as a potential endogenous antioxidant, its elevation could also be interpreted as an indicator of the mobilization and maintenance of plasma antioxidant status needed during the recovery period after exercise (29).” It is suggested to compare the results of the present research with some similar studies which is done before. Much more explanations and interpretations must be added for the results, which are not enough.	Corrected on page 6-7 in accordance with word count limitations of journal (i.e. Normal Articles max word count: 3500 and Long Articles max word count: 5000)
Please make sure your conclusions' section underscore the scientific value added of your paper, and/or the applicability of your findings/results, as indicated previously. Please revise your conclusion part into more details. Basically, you should enhance your contributions, limitations, underscore the scientific value added of your paper, and/or the applicability of your findings/results and future study in this session.	Corrected on page 6-7 in accordance with word count limitations of journal (i.e. Normal Articles max word count: 3500 and Long Articles max word count: 5000)

REVIEWER 2	
Reviewers' Comments	**Response**
The authors are invited to clarify certain ambiguities and making some modifications that we consider of paramount importance .	Clarified accordingly. In addition, novelty of study with appropriate references included
1. The manuscript could be improved in clarity if a native English speaker was able to help review this or if it could be sent to a proofreading service.	Manuscript language edited again. 2 of authors are native English speakers and on editorial boards of numerous international English journals (i.e. ACSMs Health and Fitness journal). One author has overall British Council, IELTS Australia and University of Cambridge band score of 8.5/9.0.
2. The introduction is too superficial. The authors should be focused on studied variables and their relationship with physical training and muscle damages. There is abundant literature in this field, authors can use it to introduce the topic coherently, and advance a clear problematic. The study variables are hormones, enzymes, and metabolites that have different functions in the body (e.g. increased levels of testosterone after exercise my promote muscle building, however, a high level of cortisol can wreak havoc on the body and cause a number of unwanted symptoms). In my view, the authors should introduce these parameters and highlight their relationship with physical training, separately.	Corrected throughout Introduction
3. In the 'Study Design' section, the authors should describe the overall strategy that they have chosen to integrate the different components of the study in a coherent and logical way. All stages of the study should be listed in chronological order.	Corrected on page 3-4 and CONSORT diagram included.
4. In the ‘Procedures’ section, the authors mentioned ‘Blood samples were obtained pre- and post-experimentally …….. and stored at −80C. Testosterone, cortisol, lactate, glucose, creatine phosphokinase (sCPK), uric acid, and C-reactive protein (CRP) were analyzed using commercially available kits (Phoenix Peptides, 98Karlsruhe, Germany)’. This gives rise to several questions and prompts several explanations: The blood samples were taken at which time of the day? This is very important due to the existence of diurnal cycles of cortisol levels in humans. Why blood was stored? Assessments were made in serum or plasma or in whole blood? CRP was listed here but not included in the 'Results' section. The authors should explain all methods of assessments (principle, materials, CVs), and quote the manufacturer and origin of each kit.	Expanded upon on Page 4
5. In the ‘Intervention’ section …… 55-70% maximum heart rate (HRmax) for weeks 1-2 and 70 -85% HRmax for weeks 3-4. In my view, the target intensity of 85% HRmax for previously-trained individuals is not a moderate intensity, please explain.	Corrected throughout
6. In my view, training individuals with different fitness levels at the same percentage of the theoretical HR max is a training principle mistake, please explain.	Included in *Limitations*
7. Remarque 6 is also applicable for the resistance training: why authors did not use the 1−RM tests to accomplish personalized training programs?	Appropriate reference to intensity included and also included in limitations

8. The authors should detail the TKD test protocol, and explain how it was performed.	Included on page 4
9. In the 'Statistics' section: Do authors have checked the data distributions for normality? Using a t-test several times generates an error type 1. In addition, in such studies what is more important are changes that occurred after each test and at the end of the intervention. Thus, I invite the authors to determine changes that arise after tests before and after training and to compare them using a two-way (group × time) repeated-measures ANOVA.	Included in Statistical analysis, Results and Discussion.
10. In the 'Results' section, tables should be revised carefully. N=6 in Tab 3; Acute response to 20 minutes of structured taekwondo….. I didn't understand this, please explain; …….. statistically significant between experiment and control group……. Do authors have used a control group?	Corrected at all Tables
11. Lactate outcomes in female participants after testing were 3.7±2.3 and 4.3±2.5. This indicates that in some individuals the lactate accumulations were approximately 1.4 and 1.8 mmol / L, which is below the aerobic threshold. Please explain (knowing that the subjects are previously trained and actions involved in TKD are characterized by periods of high levels of technical, tactical, psychological, physical fitness, and physiological characteristics).	Included in Discussion in accordance with word count limitations of journal (i.e. Normal Articles max word count: 3500 and Long Articles max word count: 5000)
12. One specific stressor known to drastically increase the circulating levels of cortisol in the human body is physical exercise. In general, exercise at or above 60% of the individual's maximal oxygen consumption (VO2max) produces a significant increase in circulating cortisol. However, in the present manuscript cortisol level decreased after the TKD test in both groups. It is unclear why this resulted, do the authors have an explanation. [See: Guseman et al. Exercise and circulating Cortisol levels: The intensity threshold effect. Journal of endocrinological investigation 2008; 31(7):587-91. DOI: 10.1007/BF03345606]	As stated in *Discussion*, magnitude of change (increase) is less following training. This is a training adaptation in line with other previous studies as indicated/referenced

2 Revision 1

1 comment · 31 Oct 2020

Referee 1 Reviewer

REJECT 31 Oct 2020

Even if the authors have tried to improve the manuscript, the improvements concern form rather than substance, although substantive improvements were required. The overall scientific level is very low. Nothing was done in this regard in the revised manuscript.

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Revision 2

AUTHORS' RESPONSE TO REVIEWERS

Authors' reply to reviewers

The next pages contain the authors' point-by-point reply to the comments of this revision round, as submitted with the revised manuscript. It is published as the authors wrote it.

Effects of Four Weeks of Concurrent Taekwondo Plus Resistance Training on Plasma Biomarkers of Muscle Damage in Previously-Trained Individuals by Mathunjwa *et al*.

Reviewers' Comments:	
Reviewer 1:	
	Response
Even if the authors have tried to improve the manuscript, the improvements are rather of form, not of substance, as it was required. The global scientific level is very low. Nothing was done from this point of view in the revised manuscript.	Noted. Please see below comment from reviewer 2. Also, significant changes made to improve form of manuscript as indicated below.
Reviewer 2: ***Changes highlighted in yellow***	
	Response
It is clear that the authors have put a lot of effort into the preparation of their manuscript and that they have tried to make all the necessary corrections. However, some concepts should be developed more precisely and some sections require more work.	Noted. Corrections made as required and indicated. The authors would like to express their appreciation for the commitment and level of detail that this reviewer has shown to allow significant improvement in the manuscript.
Title: It not reflect the paper content. The main hormones concerned with growth are pituitary growth hormone, thyroid hormone, the sex hormones testosterone and estrogen, and the pituitary gonadotropic (sex-gland-stimulating) hormones. Cortisol is not a growth-related hormone. We propose: The effects of four weeks of Concurrent Taekwondo plus Resistance Training on plasma biomarkers of muscle damage in previously-trained individuals.	Title corrected as indicated on Page 1. Also, corrected throughout manuscript, where necessary and indicated
Abstract:	
'But' is used to connect ideas that contrast..... Not the case here.	Removed on Page 2
Line 15: …..on growth-related hormones (testosterone, cortisol). Please, make necessary changes.	Removed accordingly
Line 17: remove n=.	Removed accordingly
Line 18: remove a five-day weekly one-hour.	Removed in page 2 line 18
Line 19: (MODG, n=14).	Corrected accordingly
Line 20: (HIG, n=14).	Corrected

	accordingly
Background	
In the first paragraph, the authors only used the study of Banfi et al. (2012). We believe that there is a wealth of new studies in this area that could strengthen their ideas.	Significant corrections made to background as suggested
Line 70-71: …….. such as uric acid and lactate in scavenging free radicals …..: New for us, the authors should provide other literature support for this point. The studies of Djarova et al. (2009, 2010 and 2011) are insufficient.	Additional literature support and references included
Objectives: Should be rewritten according to comments.	Corrected.
Methods	
Study Design: All stages of the intervention should be briefly described according to their chronological order from the beginning until the end.	Corrected at Section 3.1
Participants	
Twenty-eight previously-trained individuals were assessed for eligibility and analyzed. Do this sample size is big enough? Do authors have conducted a power analysis calculation before the intervention?	Explained in newly added Section 3.1. (and statistics appropriate in Section 3.5 as previously indicated but again highlighted)
The authors should add certain characteristics of the participants to have a clear idea about them (height, weight, sport specialty, experience).	Participants characteristics included in Sections 3.1 and 3.2, where appropriate
Procedures	
Please replace “procedures” with “biochemical analyzes”.	Correction made in Section 3.3.
Authors should add a brief description of each measurement (Principle of determination, used material, CVs, sensitivity).	Included in Section 3.3
Intervention	
Please remove the first sentence.	1st Sentence removed at Section 3.4
The authors noted that the intensity of the training was controlled by HRmax. Is this the theoretical heart rate?	Included in Section 3.4
RT was performed at the same intensity by all participants. Are the authors sure that all subjects have the same physical fitness level?	Further explanation of RT load included in Section 3.4
Please add the between-sets and between-exercises times of rest.	Included in Section 3.4
Statistics analysis	
Based on the multiple t-tests reported there is a likelihood of a type 1 error. I would suggest that authors perform a mixed ANOVA (group x time) to compare the within-group changes, or, at minimum, conduct t-tests and using Bonferroni-corrected p-values for all non-normal distributions.	t-test removed and ANOVA included in Section 3.5.

Authors noted that they have used P values of ≤ 0.05 and ≤ 0.01 to consider the significance of changes. Please provide a literature support for this chose.	Reference included in Section 3.5.
Results:	
Do authors have taken in consideration the variation in the plasmatic volume that occurred after testing?	Included in Section 3.3 (Biochemical analysis)
The results are compounded by the fact that the groups are not matched at the start of the project. Changes in outcome measures, therefore, should not be based only on the absolute change achieved but also the relative change. Data should be reported in Tables and analyzed statistically for the relative and the absolute change.	Matching limitation included in Section 5.1 (Limitations) Absolute and relative changes information included in Abstract, Sections 3.5. (Statistical analysis), 4 (Results) and 5. Discussion and
Tables' titles should be rewritten: The title summarizes the main idea of the study. A good title contains the fewest possible words that adequately describe the contents and/or purpose of the research paper.	Table titles corrected for Table 1, 2 and 3
Please remove (Mean ±SD) from Tables.	Removed for Table 1, 2 and 3
The full name of each group and its abbreviation appear only in the title of the table	Corrected for Table 1, 2 and 3
Please replace 'Pre-TKD test' with 'Pre-test' and 'Post-TKD test' with 'Post-test'	Corrected for Table 1, 2 and 3
Please remove "four weeks" from tables to titles.	Removed from Tables 1, 2 and 3
The symbol '*' into the table reproduces the same meaning.	Removed from Tables 1, 2 and 3
In my view, changes and p values should be added to the tables.	Absolute and relative changes, as well as p-values included in Tables 1, 2 and 3
Table 3: n = 6	Corrected in Table 3
Discussion	
In the first paragraph, authors may reiterate their research problem and concisely summarize the major results noted.	Research problem and summary of major findings reiterated in 1st paragraph of Section 5
References: Authors should pay a lot of attention to the references they use and give preference to prestigious journals	Significant improvements in number and quality of references affected throughout

	manuscript Rfrences alsmots exclusively impact-factored, Scopus-listed journals, such as Acta Physiologica with IF of 5.210

3 Revision 2

1 comment · 24 Mar 2021

Mohamed SAID Reviewer

MAJOR REVISION 24 Mar 2021

It is clear that the authors have gone to great lengths to improve their manuscript. Nevertheless, we still have a few remarks mainly concerning the form.
Introduction
More than 1062 words long. Too much.
Line 48. “Should the load be too long and/or too intense. . .. . ..” The main components of the training load are volume and intensity, and the load is characterized as too stressful or too easy.
Line 121. Are the authors certain that this is a state of physiological stress?
In the “Participants” section, the authors have mentioned the same information twice! From line 127 to line 139 and from line 140 to line 149.
Line 160. The same information appears on line 136.
Line 171. “The intra-assay coefficient of variation for testosterone, cortisol, S-CPK, uric acid and lactate was 4.5%, 5.5%, 6.5%, ≤ 3.6%, ≤ 6.0% and ≤ 6.3%, respectively”: 6 values for 5 variables!
Line 184. HR max was calculated using the HR max estimation formula: 220-age. In my view, using the theoretical heart rate means that all participants have the same level of fitness. Have the authors studied this point?
In the “Results” section
The authors should present their results in tables or text format.
It is not necessary to mention the values of the non-significant changes.
Remove F (1) values.
Discussion Section
More than 1400 words. Too long.
Remove the first 4 lines.
Line 369. “Lactate is an important biomarker of physiological stress”. References?
Tables
Please add “Effects of 24 weeks of ….” to titles.
Please replace “Mean Diff.” by “Changes”.
Changes and % changes should be presented as M ± SD.

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Revision 3

AUTHORS' RESPONSE TO REVIEWERS

Authors' reply to reviewers

The next pages contain the authors' point-by-point reply to the comments of this revision round, as submitted with the revised manuscript. It is published as the authors wrote it.

Effects of Four Weeks of Concurrent Taekwondo Plus Resistance Training on Plasma Biomarkers of Muscle Damage in Previously-Trained Individuals by Mathunjwa *et al*.

Reviewers' Comments:	
Reviewer 1: ***Changes highlighted in blue***	
	Response
It is clear that the authors have gone to great lengths to improve their manuscript. Nevertheless, we still have a few remarks mainly concerning the form.	Thank you
Introduction	
More than 1062 words long. Too much	Background reduced to 676 words
Line 48. “Should the load be too long and/or too intense……..” The main components of the training load are volume and intensity and the load is characterized as too stressful or too easy.	Corrected accordingly
Line 121. Are the authors certain that this is a state of physiological stress?	Appropriate references provided throughout supporting this concept
In the “Participants” section, the authors have mentioned the same information twice! From line 127 to line 139 and from line 140 to line 149.	Corrected accordingly
Line 160. The same information exists on line 136.	Corrected accordingly
Line 171. “The intra-assay coefficient of variation for testosterone, cortisol, S-CPK, uric acid and lactate was 4.5%, 5.5%, 6.5%, ≤ 3.6%, ≤ 6.0% and ≤ 6.3%, respectively” 6 values for 5 variables!	Corrected accordingly
Line 184. HR max was calculated using the estimation of HR max formula: 220-age. In my view, using the theoretical heart rate means that all participants have the same level of fitness. Have the authors studied this point?	“Theoretical” or “tested” HR have **EXACTLY** the same applications: “HRmax can be determined directly, through ergometers with incremental effort protocols, or indirectly, through predictive equations” see https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6202885/pdf/0103-0582-rpp-36-03-309.pdf
In the “Results” section	
Authors should present their results in tables or text format.	Tables removed
It is not necessary to mention the values of the non-significant changes.	Removed throughout *Results*
Remove F (1) values.	Removed throughout *Results*
Discussion Section More than 1400 words. Too long.	*Discussion* reduced to 903 words
Remove the first 4 lines.	Removed
Line 369. “Lactate is an important biomarker of physiological stress”. References?	Lactate is an important biomarker of physiological stress in that it indicates the activation of glycolysis in skeletal muscle during exercise and physiological adaptation to exercise (36). 36. Jabbour G, Lancu H, Paulin A. Effects of high-intensity training on anaerobic and aerobic contributions to total energy release during repeated supramaximal exercise in obese adults. Sports Med Open; 2015:1: 36.10.1186/s40798-015-0035-7. doi: 10.1186/s40798-015-0035-7. [PMID: 26512339].

	For additional reading see: https://pubmed.ncbi.nlm.nih.gov/18692033/ https://pubmed.ncbi.nlm.nih.gov/21635945/ https://www.thelancet.com/journals/landia/article/PIIS2213-8587(13)70154-2/fulltext
Tables	Tables removed as suggested above
Please add “Effects of 24 weeks of ….“ to titles.	
Please replace “Mean Diff.” by “Changes”	
Changes and % changes should be presented as M ± SD	

4 Revision 3

0 comments

No public comments in this round.