THE EFFECT OF WEIGHT TRAINING IN THE MORNING AND EVENING SHIFTS ON CORTISOL, SAFETY HUMERAL STUDENT ATHLETES

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ABSTRACT
Attention to the internal agent “biological clock” and its impact on the physiological status, and thus physical performance seems of paramount importance, especially at different times of day. In one study it was shown that simple reaction time, muscle strength, aerobic power and flexibility in the evening (compared with morning) has a significant advantage, which is probably the result of the body temperature and the secretion of hormone in the afternoon. The aim of the present study, the effect of weight training in the morning and evening shifts, is on cortisol. Safety humeral athletic student of Semnan province. In this quasi-experimental study, the effect of resistance training in the morning and evening on cortisol response and serum levels of immunoglobulin’s IgG, IgA, IgM has been studied. Data on the average and standard deviation are classified and described. For comparison, the mean difference measured both groups during the first day of the test (t-test) were related. As the responses obtained from participants in the morning and afternoon for the immunoglobulin was not significant, the final conclusions indicated that ineffective weight training on safety and its effect on cortisol levels is Humeral. Given that weight training can increase cortisol levels. Therefore, it seems that this protocol is likely to increase the effectiveness of physical fitness.

Keywords: Cortisol, Safety Humeral

INTRODUCTION
One of the vital systems of the body is the immune system. Life is compromised and perhaps impossible without this system’s proper function. The development of the scope and field of immunology and sport hormones, and obtaining the information caused data connections between science like sports science, medicine, immunology, pathology and behavioral science. The immune response to physical activity reasons are so important and physical activity will be useful for those people who do physical practices to get the benefits of physiological and psychological health.

Problem Statement
Attention to the internal agent “biological clock” and its impact on the physiological status, and thus physical performance is essential, especially at different times of day (Reilly et al., 1997). In one study, it was shown that simple reaction time, muscle strength, aerobic power and flexibility during the evening compared with morning had a significant advantage, probably due to the higher body temperature and hormonal factors in the noon (Reilly et al., 2000). Daily changes in athletic performance, usually in the afternoon, coinciding with an increase in body temperature, reaches a peak. School performance may be affected by the temperature patterns of environmental mechanisms.

As neurostimulation with daily changes do not appear; this special day in a variety of daily activities in the energy conversion of ATP to aerobic and anaerobic metabolism reported for all activities and evidence of muscle (eccentric, isometric, concentric) is a large number of muscle groups. Power functions regardless of time of day seems to have a special day of resistance training to develop such compatibility. Stress that triggers the immune system and physical activity can be done as a pressure leading to changes in the device.

On the other hand, cortisol hormone in stressful situations is increased (Gaeini, 2005).

In this study, the researcher intends to answer the question whether weight training in the morning and evening shifts on cortisol, humeral athletic student has a different effect or not?
The data were described by mean and standard deviation category. To compare the differences in both groups during the first day of the test, the dependent test (t-test) was used. Analysis of variance (ANOVA) and LSD is a way to compare average measured variables at any stage and to identify significant differences between the four groups. All statistical operations was done by the SPSS software, version 16, and the results are as follows:

**Test Research Hypotheses**

First null hypothesis: weight training in the morning and evening shifts of students has no effect on cortisol.
Table 1: ANOVA Analysis Variable Serum Cortisol

<table>
<thead>
<tr>
<th>P Value</th>
<th>F Value</th>
<th>Change Resource</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.01</td>
<td>45.11</td>
<td>Cortisol</td>
</tr>
</tbody>
</table>

Sources of variation, F value, P value
Cortisol, 11/45, 01/0

Table 1 showed that the serum cortisol responses between morning and evening exercises has a significant difference. ANOVA was used for data analysis to pre-test and post-test average groups in serum cortisol during morning and afternoon. The result analysis showed a significant difference between serum cortisol variable. There are four stages. In order to determine the difference between the groups, Scheffe test was used. The result of this analysis showed a significant difference between the pre-test cortisol and cortisol in the morning before the afternoon test (P =0/004). In addition, there is a significant difference between pre-test cortisol and cortisol in the morning before the afternoon test (P =0.007). The result of the analysis showed that there is no difference between morning cortisol post-test and afternoon cortisol post-test (P =0 / 01).

Second Null Hypothesis
Weight training in the morning and evening shifts on immunoglobulin IgM does not affect the athletic students.

Table 2: Analysis of Variance for the Variable IgM

<table>
<thead>
<tr>
<th>P Value</th>
<th>F Value</th>
<th>Change Resource</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.087</td>
<td>2.632</td>
<td>IgM</td>
</tr>
</tbody>
</table>

Sources of variation, F value, P value.
IgM, 632/2, 087/0.

Table 2: The analysis assumed the above study, analysis of variance was used to dispose of the pre-test and post-test group mean serum IgM in the morning and afternoon times compared. Variable analysis showed that there is no difference between serum IgM results in four measurements (P =0 / 087);
So, null hypothesis is confirmed.
Third null hypothesis: weight training in the morning and evening shifts on immunoglobulin IgM does not affect athletic students.

Table 3: Variable One-Way Analysis of Variance IgG

<table>
<thead>
<tr>
<th>P Value</th>
<th>F Value</th>
<th>Change Resource</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.23</td>
<td>1.65</td>
<td>Between Groups</td>
</tr>
</tbody>
</table>

Sources of variation, F value, P value
Between groups, 65/1, 23/0

Table 3 shows that, according to the information obtained, there is no difference between morning and evening exercises IgG changes. Analysis assume the above study, analysis of variance was used to compared the pre-test and post-test group mean serum IgG in the morning and afternoon times. The analysis result showed that serum IgG in the four measured variables, there is difference (P =0 / 23). The research hypothesis was confirmed.
Fourth null hypothesis: weight training in the morning and evening shifts on immunoglobulin IgA athletic students was affected.

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Table 4: Analysis of Variance for the Variable IgA

<table>
<thead>
<tr>
<th>P Value</th>
<th>F Value</th>
<th>Change Resource</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.821</td>
<td>0.387</td>
<td>IgA</td>
</tr>
</tbody>
</table>

Table 4 above assumption for analysis, variance analysis was used to mean a group stacked in pre-test and post-test serum IgA during the morning and afternoon comparison. The result variable analysis showed that there is no difference between serum IgA at four different samples (P =0.821). The research confirmed the assumption round.

**Conclusion**

Attention to immunology and exercise due to the interest and the need of society, health promotion. Currently, it is accepted that physical inactivity is an important risk factor causing the diseases. Apparently, regular and moderate exercises, seems to be a fundamental solution to prevent some diseases. In the present study, the effect of exercise on the response of cortisol hormones in the morning and evening is investigated, as well as some of the serum immunoglobulin including IgG, IgA and IgM. As the responses obtained from the participants in the morning and afternoon for the mentioned immunoglobulin was not significant, thus, the conclusion in a general review and possible causes of the increase in antibodies in a general content and opinions of researchers at the same pattern are discussed.

Therefore, we can study except the last four sessions of practice, introduced a plan to maximize the research McDowell et al., (Mac States, 1992), the reduction in the IgA and actively track and reported on the treadmill, however, IgA concentration in sub maximal exercise was not achieved significantly. On the other hand, aspects of immune function temporarily altered after practice. Even prolonged and intense exercises causes a temporary change in the immune response and its failure. This answer is typically continued for a period of 3 to 24 hours after the workout. In Olympic athletes, immediately after the test with the bike ergometer until voluntary exhaustion border (for 21 minutes), a 14% increase in the IgA and IgG concentration was 12% but there was no significant difference in the IgM. High levels of immunoglobulin was temporary and the concentration of both IgA and IgG antibodies to 25 minutes after exercise, was the range before exercise (T MacKinnon, 2003). Since the present study in the four sessions, morning and afternoon, the practical plan to increase exercise, and rest for 24 hours, have not had any physical activity during this period.

As a result, if any change or an increase in serum immunoglobulin occurred after training with the rest of the participants answered a 24-hour acute immunoglobulin, returned to normal and no change was made. Practice time can also alter serum immunoglobulin response. In the present study, the mean duration of exercise in the morning and evening looks that less can affect the immune system and its function. Tzay, Lee and Gleason, 8 subjects in the hours of 9 and 14 with an intensity of 60% max VO2 for two hours made them to get to their riders. Changes in the subjects were gained. The aforesaid factors increase, a lot, in the morning and in the afternoon and evening were less, while the same researchers, three hours rest after training for recovery and normalization found the immunoglobulin sufficient. The above research results of Papakusta, 2013; the Dyson Rahimi 2010 and 2009; A. Neves, 2009; and Bishop Sakumade the 2009 had discrepancy.

The cause of the discrepancy of the findings was that the researchers (many times practice in a season or a year) were too reached to the change in the immune system, but in this study, the researchers examined a12 week survey. Most researchers suggest that cortisol production will increase with intensity. Cortisol levels increases extremely high, following intense exercise, such as marathon, the participants were observed. Even the things that were less severe, if the training is long enough, plasma cortisol levels increases (Ilias, 2003; Tartibian, 2013), the participants of the morning and afternoon sessions with the research project heartbeat 170 to 180 beats per minute for 31/18 minutes of running which seems to stress...
Research Article

enough the need for change in serum cortisol. After the last session of exercise participants who participated in the study had rested for 24 hours. Evidence suggests that a day of rest by the subjects, their serum cortisol, they had a good time to return to the original state before practice.

After the significance of mean serum cortisol post-test and post-test in the morning and afternoon as well as pre-test and pre-test cortisol morning, cortisol circadian cortisol cycle is attributed to the afternoon. They are consistent with many studies (Shariate, 2011; Ghaderi and Agha Nejad, 1999, 2002; Azerbaijani and Mike, 1994; Paolini, 2002; Tzayy, 2004; Stephen, 2004) as well as with research and Tartibian 1999 Alizadeh 2012 and 1999 and Ebrahimi, 2013 Hayes 2010.

The cause of the discrepancy can be different, because of previous statistical researchers with the above statically study research.

Conclusions of the study showed no effect of weight training on safety and its effect on cortisol Humoral levels.

Given that weight training can increase cortisol levels. Therefore it seems that this protocol is likely to increase the effectiveness of physical fitness factor.

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