

GOAL ORIENTATION AND WEIGHT CYCLING IN WRESTLING

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Abstract

Body mass (BM) reduction in wrestling is a procedure devised to gain an advantage in mass and strength over one's opponents. The mentioned procedure primarily fits the concept of goal orientation towards the result (ego orientation goals) than towards the assignment (task orientation goals). The aim of this research was to determine the differences in goal orientation between wrestlers who practice body mass reduction in relation to wrestlers who do not. The sample of 61 senior male wrestlers was divided into two groups (BM reduction and no BM reduction) and the Task and Ego Orientation in Sport Questionnaire (TEOSQ) was used. The results demonstrate that there is no difference between the two groups in relation to their ego orientation goals (reduction 3.33 ± 0.49 ; no reduction 3.33 ± 0.45). On the other hand, in relation to their task orientation goals, wrestlers who did not reduce their BM achieved higher results, however, the difference was not statistically significant (reduction 3.30 ± 0.71 ; no reduction 3.43 ± 0.56). The high level of homogeneity of the overall sample is a potential reason that there were no statistically significant differences in the obtained results.

Key words: *psychology, combat sport, body mass reduction*

Introduction

Body mass (BM) reduction with the aim of performing in a competition in a lighter weight class is a common phenomenon in wrestling, as well as in most combat sports. BM is typically reduced to allow the wrestler to compete in a lighter weight class. In order to avoid "stronger" contenders. The wrestlers in the lighter weight class are physically weaker, as weight gain in wrestling proportionally indicates greater strength as well (Song and Garvie, 1980; Yoon, 2002). In case there is sufficient time between the weighing and the fights (e.g. weighing in the evening and fights in the morning the next day), then the wrestler who reduced his BM shall be able to recover part of the weight and thus be heavier than other wrestlers. The mentioned strategy is also known in literature as weight cycling (Barcal et al., 2016; Gann et al., 2015; Lingor and Olson, 2010) and it provides the wrestlers physical, and according to some authors, even mental advantage over the opponents (Pettersson et al., 2013; Karnincic et al., 2016). The above-described phenomenon is quite present in numerous combat sports, however, the potential health complications (due to the combination of acute dehydration and weight training) make it a phenomenon of specific importance (Artioli et al., 2010; Kiningham and Monseau, 2015). The correlation between acute dehydration (as a result of BM reduction) and cognitive conditions has already been recorded in literature (Choma et al., 1998), as well as negative effects of rapid BM reduction on psychological conditions and the development of numerous psychological disorders (Khodaei et al., 2015; Degoutte et al., 2006; Steen and Brownell, 1990). Psychological studies in relation to BM reduction in combat sports generally deal with the consequences of rapid BM reduction. A study by Pettersson (2013) presents some of the motives because of which fighters decide to attempt large BM reductions and claims that insight into the causal mechanism of this phenomenon is possible. It is therefore necessary to collect as many information as possible on the motivational aspects of problematic BM reductions in order to enable preventive action instead of repairing consequences.

Motivation is one of the key factors in any sport. It is a prerequisite for completing all that is required to accomplish the desired goals. Motivation and individual behaviour are closely connected with goals. The social-cognitive model of achievement motivation suggests that there are two types of goal orientation (Nicholls, 1992; Roberts, 1993; Duda, 1992). The first one is orientation towards the assignment, learning and improvement (task orientation goals). This type of goal orientation implies that the athlete evaluates his competence in relation to his previous performance, while his criteria is based on a subjective perception. The second type of goal orientation is directed towards performance and result (ego orientation goals). In this case, progress and improvement are not sufficient for the athlete to feel successful, and he must be better than others. In theory, the second type of orientation is considered to be inferior compare to orientation towards the assignment. In this case, the athlete can set goals that are lower than his abilities in order to avoid failure. Wrestlers who practice BM reduction do not attempt to defeat the best opponent; they avoid him and they seek highest possible result in lower weight category. In accordance with the above-mentioned goal orientation theories, using BM reduction to avoid a strong rival is by no means considered as goal orientation towards the assignment, learning and improvement (task orientation goal), but it is purely orientation towards the result (ego orientation goal). Based on all the above-mentioned,

the aim of this research was to determine the differences in goal orientation between wrestlers who reduce their BM and wrestlers who do not. The hypothesis is that the wrestlers who reduced more BM are statistically significant different in the goal orientation in contrast to the wrestlers who do not reduce their BM.

Methods

The sample of examinees was composed of 61 senior male wrestlers divided into two groups out of which one group (n=21) did not practice BM reduction (<1 kg reduction), whereas the second group (n=40) reduced their BM before competitions (≥ 1 kg reduction). It can be said that this is a representative sample of senior male wrestlers as this research covered over 80% of senior wrestlers who compete at National Championships in Croatia. The general characteristics of the examinees are presented in Table 2.

The sample of variables was composed of 10 variables, out of which 6 variables describe the sample: age, body mass, body height, body mass index, experience and national championship ranking; 2 variables are related to body mass reduction: body mass reduction (variable for group definition) and urine specific gravity (USG); and there are 2 motivation variables (ego – task). The Task and Ego Orientation in Sport Questionnaire (TEOSQ) was used (Duda, 1989) in the translated and adapted version (Barić et al., 2002). The questionnaire consisted of 13 questions which are specific for one of the goal orientation dimensions. The answers were presented as a Likert scale as follows: 1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree, while the results were calculated according to the following formula: Ego Orientation ($q1 + q3 + q4 + q6 + q9 + q11$) $\div 6$; Task Orientation ($q2 + q5 + q7 + q8 + q10 + q12 + q13$) $\div 7$.

Description of the experimental procedure. All the examinees arrived to the National Wrestling Championship where before the weighing, they all gave urine samples which were used to calculate the urine specific gravity (USG) by using the refractometer method. Prior the fights, examinees were given detailed instructions for fulfilling the questionnaire after which they completed both the anamnestic and motivational questionnaire. After the competition, the final ranking of the examinees at the National Championship was also recorded.

Ethical Standards. Each procedure performed in this study in relation to human research was conducted according to the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. This study was approved by the Institutional Ethics Committee. All the examinees signed written consent forms for voluntary participation in this research.

Data processing methods. All the obtained data was statistically process by using the STATISTICA ver. 12 software programme (Statsoft, Inc., Tulsa, OK, USA) and with the level of significance of $p < 0,05$. All the variables were processed with the use of descriptive statistics (arithmetic mean and standard deviation), while the normal distribution was assessed by using the Kolmogorov-Smirnov test. In order to assure the reliability of the questionnaire, the Cronbach's Alpha and the Average Inter-Item Correlation were calculated. The differences between the groups were tested with the one-way analysis of variance (ANOVA) test, while the Man-Whitney U test was used to check the difference in variables that were not normally distributed.

Results

Table 1 presents the questionnaire's reliability parameters (Cronbach's alpha and Average Inter-Item Correlation) for both groups, as well as for each group separately

Reliability/Item	All groups (n=61)		BM reduction (n=40)		No BM reduction (n=21)	
	Ego	Task	Ego	Task	Ego	Task
Cronbach's alpha:	0.77	0.84	0.82	0.69	0.88	0.88
Average Inter-Item Correlation:	0.35	0.48	0.44	0.27	0,58	0.53

The results in Table 1 clearly indicate that the reliability criteria, both for the entire sample as well as for both groups, were met for each of the two motivational aspects, although the value of the Cronbach's alpha in the BM reduction group was borderline in relation to the task variable.

Table 2 contains descriptive statistical parameters (arithmetic mean and standard deviation), normal distribution (Kolmogorv-Smirnov test) and the differences between the groups (one-way ANOVA). The differences between the variables that were not normally distributed went through additional analysis by using nonparametric statistics (Man-Whitney U test).

Variables	All groups (n=61)		BM reduction group (N=40)		No BM reduction group (N=21)		ANOVA MW-U test	
	mean±SD	K-S	mean±SD	K-S	mean±SD	K-S		
Age (years)	21.62±4.00	p<0.15	21.10±4.52	p<0.10	21.90±3.73	p>0.20	F=0.55	p=0.46
Body weight (kg)	76.41±14.81	p<0.10	79.16±16.57	p>0.20	74.98±13.80	p<0.15	F=1.10	p=0.30
Body height (cm)	176.88±9.41	p>0.20	178.50±9.09	p>0.20	176.03±9.58	p>0.20	F=0.95	p=0.33
BMI	24.27±3.17	p>0.20	24.60±3.16	p>0.20	24.10±3.20	p>0.20	F=0.34	p=0.56
Experience (years)	10.65±4.49	p>0.20	11.24±4.54	p>0.20	10.34±4.49	p>0.20	F=0.55	p=0.46
Championship ranking	6.64±4.32	p<0.05*	5.76±3.63	p>0.20	7.10±4.61	p>0.20	F=1.33 Z=-0.90	p=0.25 p=0.37
BM reduction (kg)	2.55±2.17	p>0.20	0.19±0.37	p<0.01*	3.80±1.60	p>0.20	F=102.69 Z=-6.34	p<0.001 p<0.001
USG	1.029±0.004	p>0.20	1.026±0.004	p>0.20	1.030±0.004	p>0.20	F=12.98	p<0.001
Ego	3.33±0.46	p>0.20	3.33±0.49	p>0.20	3.33±0.45	p>0.20	F=0.004	p=0.95
Task	3.38±0.62	p>0.10	3.30±0.71	p>0.20	3.43±0.56	p>0.20	F=0.66	p=0.42

BMI –body mass index; USG – urine specific gravity

The values in Table 2 clearly indicate that the groups were statistically significantly different only in the variables related to BM reduction and urine specific gravity (USG). The variables on Championship ranking and BM reduction were not normally distributed.

Discussion

Almost 2/3 of the wrestlers in this research use BM reduction. Even though this was never precisely determined, speculations suggest that approximately 60% of athletes in combat sports practise BM reduction (Gann et al., 2015). This research supports such speculations, despite the fact that in some cases the presumed percentage goes up to 85% (Artioli et al., 2010). Table 2 clearly demonstrates that these were two extremely homogeneous groups. Numerically speaking, wrestlers who do not reduce BM are generally somewhat taller, heavier (and consequently have a higher BMI) than wrestlers who reduce BM, however, this can be explained by the fact that BM reduction is usually more often present in lighter weight classes (Zubac et al., 2016). Although the group that reduced BM invested much more effort into their preparation for the competition, there was no statistically significant difference in terms of achieving higher final ranking positions. Some authors managed to demonstrate correlations between weight cycling and success (Wroble and Moxley, 1998; Alderman et al., 2004), however, others failed to do the same (Horswill et al., 1994), so that studies show conflicting results in relation to weight cycling and various types of sports performance (Gann et al., 2015). As one of the basic methods in BM reduction in combat sports is the restriction of fluid intake (Lingor and Olson, 2010), it is not uncommon that there is significant difference in the results for urine specific gravity. Although wrestlers who reduce BM are significantly more dehydrated than wrestlers who do not reduce BM, it should be mentioned that the value of USG in wrestlers who do not use BM reduction is 1.026. The reference value for normal hydration is <1.020, so that the group that which did not report BM reduction was also in the state of mild acute dehydration. Wrestlers who do not practice BM reduction methods are often very close to the limit weight for their weight class, and therefore, due to the fact that by fluid intake they risk going into the higher weight class, such wrestlers also avoid fluid intake right before a competition which can be the reason for the mentioned results in their USG values. In terms of goal orientation towards the result (ego orientation goals), there was no difference between the two groups (reduction 3.33±0.49; no reduction 3.33±0.45). Evidently, all wrestlers who compete at National Championships are result oriented regardless of BM reduction. Ego oriented athletes are more likely to use “illegal” methods for achieving results (Duda and Saly, 1992). Although BM reduction is not an illegal method, it however does presents a way of gaining advantages over other opponents, as well as a type of rule manipulation (the rules require that the opponents should be equal in relation to their weight). Weight cycling is not an illegal strategy in combat sports, however, it is questionable both due to health and ethical reasons because it can present a perplexing factor in relation to goal orientation. Another reason for the above-mentioned results can also be the high level of homogeneity of the overall sample in this research. All the examinees have been in wrestling for over 10 years and as BM reduction represents a standard method in the sport, during the mention period wrestlers come to accept “weight cycling” as a normal and usual strategy (Khodaei et al., 2015). On the other hand, even though the results of the task variable demonstrate that there are no statistically significant differences between the two groups (reduction 3.30±0.71; no reduction 3.43±0.56), the no reduction group still showed higher results for this variable. The assumption is that the difference between the groups would have been statistically significant if it were not for the strongly

homogeneous group of wrestlers. This study does not support the thesis that wrestlers who do not use BM reduction are much more goal oriented toward the assignment (task orientation goals), however, the assumption can be made that the mentioned hypothesis would be confirmed in a less homogeneous sample. Due to the fact that weight cycling is considered a standard strategy, wrestlers might take the following standpoint on it: “Since heavier wrestlers are coming down to my weight class, I also must go down to a lighter weight class if I want to compete with equal opponents”. In the above-mentioned system of abnormal values, wrestlers who reduce their BM are only striving towards a fair fight and those who refuse to do the same are not ready to do everything it takes to succeed. This system of abnormal values can further result in goal orientation disorders (Schwartz and Sagiv, 1995) which can also be the reason why the tested groups showed no statistically significant differences.

Conclusion

This research was conducted with the aim to determine the differences between two groups of wrestlers (BM reduction before competitions or no BM reduction) in relation to their goal orientation type. As a result of this research, the conclusion can be made that there are no differences in relation to their goal orientation towards the result (ego orientation goals) or in their orientation towards the assignment (task orientation goals), even though the wrestlers who do not practice BM reduction are more task oriented. A high level of homogeneity or an abnormal value system are both potential reasons for the fact that the two groups showed no statistically significant differences. The BM reduction phenomenon in sports with weight classes requires further analysis, both from the psychological and sociological aspect, as the mentioned problem is widespread and includes numerous possible health complications.

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