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### Age-related differences in motivational climate and extrinsic-intrinsic motivational factors among members of the Hungarian national wrestling teams

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Ágnes Szemes<sup>1\*</sup>, Péter Vig<sup>2</sup>, Kinga Nagy<sup>3</sup>, Gábor Géczí<sup>4</sup>,  
Kornél Sipos<sup>1</sup>, László Tóth<sup>1</sup>

<sup>1</sup>Department of Psychology and Sport Psychology, University of Physical Education, Budapest, Hungary

<sup>2</sup>Budapest Honvéd Sports Association, Budapest, Hungary

<sup>3</sup>Department of Recreation, University of Physical Education, Budapest, Hungary

<sup>4</sup>University of Physical Education, Budapest, Hungary

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#### **Abstract**

*In sport psychology, research regarding athletes' motivation and perceived motivational climate is becoming more and more popular. The major aim of the present study was to investigate whether sport motivation and the perceived motivational climate of the members of the Hungarian national wrestling team varied depending on the age-group of the wrestlers. Our results indicated that Amotivation presented a descending pattern with age, the youngest players (10-19 years old) attaining highest levels of Amotivation, while the 19-25 years-old age-group the lowest. Although Amotivation increased somewhat in the 25-28 years old age group, this increase was not significant. Regarding the use of external regulation factors, our findings showed that the youngest age group (10-19 years old) relied significantly more on these mechanisms. Consequently, our findings suggest that the youngest wrestlers are more prone to lose their motivation and rely on extrinsic regulation factors in order to be motivated. These aspects have practical importance as a supportive attitude shown by coaches may meet athletes' basic psychological needs specific for their age, thus increasing their motivation for preparation and competition.*

**Keywords:** sport motivation, perceived motivational climate, wrestling

Popular since the time of the ancient Olympic Games, wrestling is a combat sport in which competitors perform a one-on-one combat on a wrestling mat. The game can be won by forcing the standing opponent to the floor or by performing various

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\* Corresponding author:  
E-mail: szemes.agnes@tf.hu

grappling holds (Gallovits, Honfi, & Széles-Kovács, 2011). Competitors almost exclusively rely on themselves, and their goal orientation is based on their relative performance (Yoon, 2002). In Hungary, wrestling has recently undergone unprecedented development since wrestlers appointed by the Hungarian Wrestling Federation have reached success at an international level. As in all sports, however, wrestling also confronts with the increasingly lower number of available juniors (Nagykálldi, 2002). A possible remedy to this problem is the emphasis of teaching combat sports in public education. Enabling students to become familiar with the basics of combat sports and wrestling facilitates the development of commitment to these sports (Trzaskoma-Bicsérdy, Bognár, & Révész, 2006).

In psychology, the simplest definition of motivation describes it as “the direction and intensity of action” (Roberts & Treasure, 2001, p. 6), namely, factors that influence behavior. Studying these factors is an essential and indispensable part of coaches’ and teachers’ work with athletes. Using the proper means of motivation enables one to raise attraction to the targeted activity, while this also requires knowledge of the phenomenon and dynamics of motivation (Kurimay, Faludi, & Kárpáti, 2012). Theories of motivation explain why people behave in the ways they do in specific situations. These theories focus either on the causes that elicit a specific behavior (content theories) or on the processes resulting in specific behaviors (process theories). Content theories assume that human behavior is driven by motives, needs, or a set of desired goals (hierarchy of needs, Maslow, 1943; ERG theory, Alderfer, 1969; two-factor theory, Herzberg, 1974; three needs theory, McClelland, 1965). Process theories define the process as a result of which a prospective outcome becomes attractive and serves as an incentive. This approach assumes that people are able to select their goals and the ways to reach them by conscious or unconscious processes (expectancy theory, Vroom, 1964; equity theory, Adams, 1963, reinforcement theory, Skinner, 1953; goal setting theory, Locke, 1968; for a review, see Gibson, Ivancevich, Donnelly, & Konopaske, 2011).

This duality of approaches also applies to motivation theories in the field of physical activities. Biddle, Hagger, Chatzisarantis, and Lippke (2007) summarized these theories in a multidimensional theoretical model. Belief-attitude theories, such as the theory of planned behavior, attribute primary importance to intentions, which enables one to anticipate actions (Ajzen, 1985). Competence-based theories, such as the self-efficacy theory suggest that individuals are able to successfully perform a given task if they are aware of their own abilities, whereby they also become motivated to perform the task (Bandura, 1986). Control-based theories lay emphasis on the perceived control of one’s own actions; accordingly, the self-determination theory makes a distinction between controlled and autonomous intentions (Deci & Ryan, 1985). Theories based on developmental stages such as the transtheoretical model assumes that development entails continuous change and that passage to a new developmental stage involves different factors at each stage (Prochaska & DiClemente, 1984). Finally, hybrid models including the Health Action Process

Approach (HAPA model) focus on the simultaneous influence of several different factors (Schwarzer, 1992).

Currently, research on motivation in sport is highly influenced by the theory of self-determination, which emphasizes the importance of the drive provided by the need for self-actualization and autonomy. According to the perceived locus of causes of action, several levels of motivation may be distinguished, a measure of which is provided by the Sport Motivation Scale (Pelletier et al., 1995). Unmotivated action, that is, amotivation is treated as a distinct quality, different from motivated action which is explained by either external or internal causes. Amotivation includes cases when people perceive themselves as incompetent regarding a given action and as having no control over their movements, and perceive their actions to be unrelated to the outcomes (Vallerand, 1997). Extrinsic motivation refers to cases when actions are elicited by external causes. Several levels of extrinsic motivation may be distinguished along a continuum defined by low and high self-determination (Deci & Ryan, 1991). Autonomy attains its lowest level within extrinsic regulation where one's behavior is driven by various types of external reinforcement. At the level of introjected regulation, individuals begin to introject the causes of their behavior so that these causes determine their behavior as part of their personality, thus, influence of the original external causes is not necessary to elicit the given behavior. At the level of identification, individuals perceive the causes of behavior and their evaluation as their own. In this case, conflicts between internal goals and external expectations are minimal, which means that behavior is self-determined (Ryan & Deci, 2002).

More recently, researchers have also defined a fourth type of motivation and revised the Sport Motivation Scale accordingly, so that the Sport Motivation Scale-II also provides a measure of this additional type of motivation. Integrated regulation further improves the consistence between previous drives and requirements. While behavior regulated by identification is distinguished by the manifestation of one's will, behavior based on integrated regulation is marked by a sense of flow and therefore it is related to intrinsic motivation (Pelletier, Rocchi, Vallerand, Deci, & Ryan, 2013). Intrinsic motivation is based on the drives of joy and satisfaction as opposed to behavior driven by external rewards or constraints. Most researchers agree that intrinsic motivation is a global construct while some authors argue that it comprises several distinct motives such as intrinsic motivation towards accomplishments (for knowledge and stimulation of experience) (Pelletier et al., 1995). Externally motivated and introjected behavior is controlled while intrinsic and integrated behavior is self-determined (Járai, 2006; see Figure 1). The rocket motivation model proposed by Poulsen, Rodger, and Ziviani (2006) combines the self-determination theory, the hierarchical levels of motivation and the state of flow. Its essential proposition is that progression from amotivation through extrinsic motivation to the level of intrinsic motivation enables individuals to reach the state of flow.

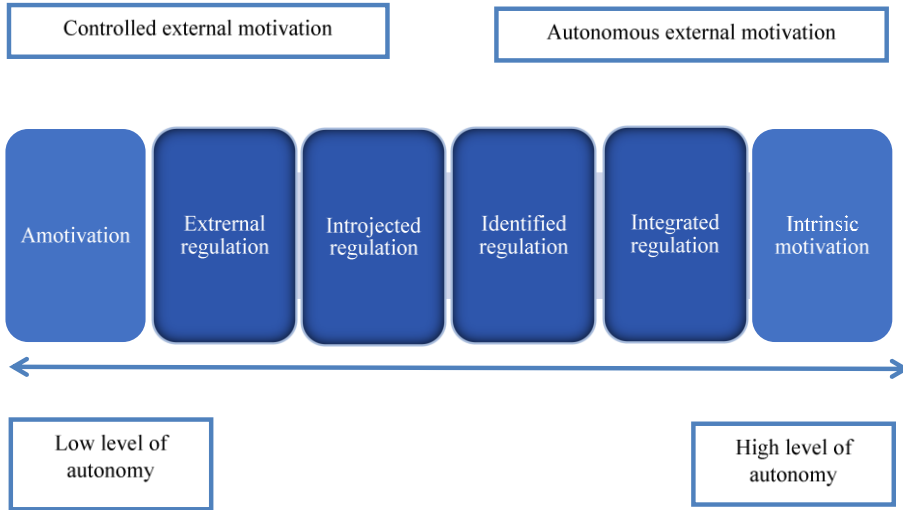


Figure 1. The process model of motivation (adapted from Ryan & Deci, 2000, p. 72)

Another important theory of motivation that should be mentioned is based on the social-cognitive theory with particular emphasis on the role of goal orientation. Ames and Archer (1988) distinguish between task-orientation and ego-orientation according to the goals that underlie task performance. Task-oriented goals are targeted at improving abilities that increase performance. Such goals motivate the individual to perform the task and a sense of success comes from achieving the previously defined goal (Biddle et al., 1999). Individuals pursuing ego-oriented goals anticipate responses according to their perceived abilities, which may therefore predict a positive achievement as well as a negative outcome. Such individuals find it difficult and distressing when being compared to others. They have a sense of success when they meet others’ performance with little effort or outdo them (Spray & Wang, 2001). One’s previous experience and beliefs about one’s performance influence one’s responses to environmental stimuli. Two types of environment may be distinguished according to an individual’s goals (task-versus ego-oriented). In an environment which consistently provides a high level of task-orientation accompanied by a low level of ego-orientation, performance-avoidance goals are less likely to emerge whereas learning goals are more likely to develop. By contrast, an environment characterized by low task-orientation and high ego-orientation increases the frequency of performance-avoidance goals and reduces that of learning goals (for an overview, see Tóth, 2015).

Seifriz, Duda, and Chi (1992) have developed the Perceived Motivational Climate in Sport Questionnaire (PMCSQ), which provides a measure of task-orientation and ego-orientation of the perceived motivational climate of sports

activities. Amorose and Horn (2000) empirically demonstrated that athletes whose coaches and parents fostered a supportive rather than controlling attitude towards them showed high levels of intrinsic motivation, which contributed to their adherence to, and persistence in the branch of sport they pursued. Moreover, several studies examined at various levels of competition male wrestlers' anthropometric, neuromuscular, and physiological qualities contributing to success achievement (Fry, Schilling, Fleck, & Kraemer, 2011; García-Pallarés, López-Gullón, Muriel, Díaz, & Izquierdo, 2011; Horswill, Scott, & Galea, 1989; Song & Garvie, 1980). An important conclusion of these studies is that aerobic performance, which has frequently been considered a basic requirement in wrestling, is not a key condition of success (Horswill et al., 1992; Sharratt, Taylor, & Song, 1986; Yoon, 2002). Thus, attention was driven to psychological factors, which have recently become a subject of growing research interest.

Nevertheless, relatively few studies have been conducted regarding the relationship between wrestlers' motivational forces and their perceived motivational climate. Domuschieva-Rogleva (2015) examined the motivation of 54 Bulgarian national wrestling team members and found that the wrestlers showed significantly higher intrinsic than extrinsic motivation, which was at the same time considerably influenced by the level of self-control. Turksoy, Güvendi, Sahin, and Korkmaz (2016) studied a sample of 55 members of World Championship final tournament camp and found that the wrestlers scored high both on intrinsic and extrinsic motivation as well as both on task-orientation and ego-orientation. Kristiansen, Roberts, and Abrahamsen (2008), who studied the perceived motivational climate and coping strategies of 82 wrestlers from four different European countries reported similar findings. Wrestlers who reached the elite level reported a significantly higher task-involving coaching climate than other wrestlers.

### **Current study**

The major aim of the present study was to investigate whether sport motivation and the perceived motivational climate of the members of the Hungarian national wrestling team varied depending on their age group. These aspects have practical importance as a supportive attitude shown by coaches may meet athletes' basic psychological needs specific for their age (Mageau & Vallerand, 2003; Szemes et al., 2016), thus increasing their motivation for preparation and competition (Amorose & Horn, 2000).

## METHOD

### Participants

Initially, we assessed 59 male wrestlers, but after introducing the data and adjusting the data-base for missing information, we remained with 42 participants with complete data sets, recruited from three national wrestling teams of three different age groups with an age range of 10 to 28 years ( $M = 19.4$ ;  $SD = 5.6$ ). All participants were licensed wrestlers of Hungarian sports associations (3 associations from Budapest and 20 from other regions of Hungary) and all were ranked in the first three positions in national competitions within their respective age groups. In order to reveal age differences within the sample, three age groups were defined, as follows: two youth groups:  $N_1 = 12$  (10-19),  $N_2 = 15$  (19 - 25), and an adult group  $N_3 = 15$  (25 - 28 years of age).

### Measures

*Sport motivation* was measured with the Sport Motivation Scale (SMS-28; Pelletier et al., 1995; adapted by Tsang, Szabó, Soós, & Bute, 2005) adapted to Hungarian population. The SMS-28 is a Likert-type self-report scale consisting of 28 items. The items compose three primary scales including extrinsic motivation, intrinsic motivation and amotivation. A total of six subscales include three types of extrinsic motivation and three types of intrinsic motivation. The SMS-28 requires subjects to indicate their agreement with each self-report item on a seven-point scale ranging from 1 (completely disagree) to 7 (completely agree). The internal consistency of the original SMS is between .74 and .80.

*Perceived Motivational Climate* in Sport was measured with the Perceived Motivational Climate in Sport Questionnaire (PMCSQ-2; Newton, Duda, & Yin, 2000; adapted by Révész et al. 2014) adapted to Hungarian population. The PMCSQ-2 is a self-report Likert-type scale including 33 items that compose the two primary scales of task-involving and ego-involving climates, each comprising three subscales (cooperative learning, important role on the team, effort/improvement, punishment for mistakes, intra-team member rivalry, unequal recognition). Subjects have the instruction to indicate their agreement with each item as applicable to their coaching environment on a five-point scale ranging from 1 (completely disagree) to 5 (completely agree). Both higher-order scales demonstrated adequate internal consistency, cooperative learning and intra-team member rivalry was found to possess marginal internal consistency (.66). Internal consistency values of the primary scales and subscales revealed that items within each scale were from moderate to high related ( $0.9 > \alpha > 0.6$ ). Although two subscales of the PMCSQ-2, namely, intra-team member rivalry and important role on the team showed low

consistency ( $0.6 > \alpha > 0.4$ ), they were considered useful for further analysis, therefore they were not excluded.

**Procedure**

Data were collected in July 2015, after a training session at a training camp for national wrestling teams. After obtaining the written consent to participate in the study, all participants were assessed on the following dimensions: age, sport motivation, and perceived motivational climate, under data collectors’ supervision.

The obtained data were analyzed with the SPSS v21.0 software. Internal consistency of the scales and homogeneity of the dataset were tested first, then correlations between the scales and their subscales were examined, and, finally, mean differences between the age groups were tested with one-way ANOVA.

**RESULTS**

Table 1 presents the descriptive statistics of our data for each age group: age group 1 (10 - 19 years-old), age group 2 (19 - 25 years-old), and age group 3 (25 - 28 years-old).

Table 1.  
*Descriptive statistics for each age group of wrestlers*

Age group	Scales	Min	Max	Mean	SD		
AGE gr 1 N=12	<b>Amotivation</b>	5	17	10.25	3.54		
	<b>SMS</b>	SMS INTR Total			68.50	8.56	
		<b>Intrinsic Motivation</b>	IM knowledge	12	28	21.41	4.48
			IM accomplishments	17	28	22.66	3.22
			IM experience stimulation	19	28	24.41	2.46
	<b>Extrinsic Motivation</b>	SMS EXTR Total			65.66	8.02	
		EM External regulation	17	25	21.50	3.00	
		EM Introjection	17	28	22.50	4.05	
		EM Identification	14	27	21.66	4.09	
	<b>PMCSQ</b>	PMCSQ TASK Total			74.33	5.69	
		<b>TASK oriented</b>	Cooperative learning	16	20	18.50	1.73
			Important role	17	25	19.75	2.33
Effort/improvement			23	40	35.95	2.76	
<b>EGO oriented</b>		PMCSQ EGO Total			45.75	5.31	
		Punishment for mistakes	14	18	13.10	4.25	
		Unequal recognition	14	27	18.50	5.20	
	InterTEAM rivalry	6	12	8.90	2.84		

Age group	Scales	Min	Max	Mean	SD		
AGE gr 2 N=15	<b>Amotivation</b>		4	11	6.33	2.64	
		SMS INTR Total			71.16	8.66	
	<b>Intrinsic Motivation</b>	IM knowledge	16	28	23.25	3.86	
		IM accomplishments	17	28	22.66	3.25	
		IM experience stimulation	22	28	25.25	2.05	
	<b>Extrinsic Motivation</b>	SMS EXTR Total			60.58	13.85	
		EM External regulation	6	26	18.16	4.80	
		EM Introjection	10	28	22.66	4.97	
		EM Identification	13	28	19.75	5.31	
	<b>PMCSQ</b>	PMCSQ TASK Total			74.75	3.13	
		<b>TASK oriented</b>	Cooperative learning	15	20	18.50	1.88
			Important role	15	23	20.16	2.36
			Effort/improvement	33	40	36.08	1.92
		<b>EGO oriented</b>	PMCSQ EGO Total			40.33	7.04
			Punishment for mistakes	9	23	12.75	3.86
Unequal recognition			12	24	17.41	4.16	
Interteam rivalry			7	13	10.16	1.74	
AGE gr 3 N=15	<b>Amotivation</b>		4	19	8.80	4.64	
		SMS INTR Total			69.53	10.29	
	<b>Intrinsic Motivation</b>	IM knowledge	13	28	21.86	4.83	
		IM accomplishments	15	28	22.73	4.62	
		IM experience stimulation	16	28	24.93	3.05	
	<b>Extrinsic Motivation</b>	SMS EXTR Total			57.93	11.53	
		EM External regulation	7	23	17.20	4.97	
		EM Introjection	13	28	22.33	5.23	
		EM Identification	11	27	18.40	4.42	
	<b>PMCSQ</b>	PMCSQ TASK Total			75.60	7.28	
		<b>TASK oriented</b>	Cooperative learning	14	20	18.66	2.05
			Important role	13	25	20.40	3.41
			Effort/improvement	28	40	36.53	3.15
		<b>EGO oriented</b>	PMCSQ EGO Total			42.13	11.30
			Punishment for mistakes	8	19	13.33	4.02
Unequal recognition			11	31	19.06	6.37	
Interteam rivalry			5	15	9.73	2.73	

Notes. SMS = Sport Motivation Scale, PMCSQ = Perceived Motivational Climate in Sport Questionnaire; Age gr 1 = 10-19 years-old, Age gr 2 = 19-25 years-old, Age gr 3 = 25-28 years-old.

Possible differences in the assessed variables (sport motivation and perceived motivation climate) depending on age were analyzed. The Shapiro-Wilk test revealed that responses showed normal distribution, which enabled the use of parametric tests. When comparing the three age-groups regarding sport motivation



(SMS Extrinsic and Intrinsic), and perceived motivational climate (PMCSQ- Task and Ego), our results yielded no significant differences neither on the composite scores of Extrinsic and Intrinsic sports motivations, nor on the Task and Ego composite scores within the perceived motivational climate. However, when we further on refined data processing, the one-way ANOVA (post-hoc Tukey) test indicated significant differences on the Amotivation and External Regulation subscales of the Sport Motivation Scale. More specifically, the 19 - 25-year-old wrestlers attained significantly lower levels of Amotivation than the youngest (10 - 19 years) wrestlers included in our study,  $F(2,36) = 3.28, p = .049, \eta^2 = .15 (M_1 = 10.25, SD = 3.54; M_2 = 6.33, SD = 2.64; M_3 = 8.80, SD = 4.64)$ , with no significant differences regarding Amotivation between the second and third age-group. Furthermore, our results also indicated that wrestlers in the youngest age group (10-19 years) used significantly more sources of External Regulation strategies in order to induce motivation (extrinsic) compared to the older wrestlers (groups 2 and 3),  $F(2,36) = 3.36, p = .046, \eta^2 = .15 (M_1 = 21.50, SD = 3.00; M_2 = 18.16, SD = 4.80; M_3 = 17.20; SD = 4.97; \text{ see Figure 2})$ .

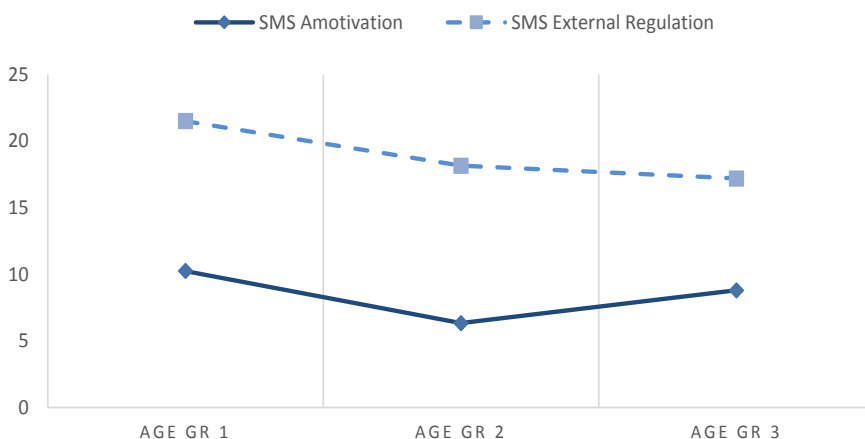


Figure 2. Mean differences in Amotivation and External regulation between age groups (Age gr 1 = 10 - 19 years, Age gr 2 = 19 - 25 years, Age gr 3 = 25 - 28 years).

## DISCUSSIONS

Elite sport essentially requires complex and methodological preparation of athletes in addition to teaching various training methods (Gombocz, 2005). Preparation for high performance also includes providing adequate motivational background, for which coaches are primarily responsible. Athletes' motivation has undergone

considerable changes in recent years, therefore further research may also clarify the specific tasks that differences in athletes' age and achievement requires from coaches. In turn, such implications should be considered in coach training and further education (Révész, Bognár, Csáki, & Trzaskoma-Bicsérdy, 2013). Coaches' nonviolent reflections connecting with athletes' preparation activities and/or competition results have to be flexible fitted to the questioned situations and age-groups. This is the essential basis of the long-term successful cooperation between the coaches and athletes.

The major aim of our study was to investigate whether sport motivation and the perceived motivational climate of the members of the Hungarian national wrestling team varied as a function of their age group. Our results indicate that overall, there were no significant differences in terms of overall sport motivation level (measured with SMS), and overall perception of the sport motivation climate (PMCSQ) as a function of the wrestlers' age. However, more in-depth analyses on these domains indicated that amotivation presented a descending pattern with age, the youngest players attaining highest levels of amotivation, while the 19-25 years-old age-group the lowest. Even if amotivation increased somewhat in the 25-28 years old age group, this increment was not significant. Regarding the use of external regulation factors, the youngest age group (10-19 years old) relies significantly more on these mechanisms, but with age, this tendency seems to follow a descending pattern. Consequently, based on our results, we may consider that the youngest wrestlers are more prone to lose their motivation and rely on extrinsic regulation factors in order to be motivated. However, our results should be interpreted with caution, and used as possible indicators which require further analysis, due to the reduced number of participants and the specificity of the sample.

As mentioned in the introductory section of this paper, a considerable number of studies emphasized that even if the aerobic performance of wrestlers is a basic requirement, psychological factors, as motivation, may have a decisive role in attaining success (Horswill et al., 1992; Fry et al., 2011; García-Pallarés et al., 2011; Sharratt et al., 1986; Yoon, 2002). Therefore, the creation of an appropriate motivational climate may significantly help wrestlers both during preparation and contest. In this respect, findings of this study suggest that subtle changes in individual motivation and motivational climate occur as a function of increasing age. These aspects have practical importance as supportive attitude shown by coaches may meet athletes' basic psychological needs specific for their age (Mageau & Vallerand, 2003; Szemes et al., 2016), thus increasing their motivation for preparation and competition (Amorose & Horn, 2000). If training sessions take place in a more motivating environment, the athletes are usually more willing to learn new technical elements and they are motivated to meet high performance requirements. Thus, knowing that the younger wrestlers may present higher levels of a motivation and use more frequently external motivational factors, may be useful for coaches when they build up effective training programs.

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