

**THE EFFECTIVENESS OF MULTILEVEL CLASSIFICATION SYSTEM FOR  
SPORT PSYCHOLOGY (MCS-SP) MODEL FOR ATHLETES PERFORMANCE  
FUNCTIONAL EVALUATION**

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**ABSTRACT**

This study attempted to distinguish issues and athletes' problem into the category of performance function based on Multilevel Classification System for Sport Psychology (MCS-SP). In this study, athletes' performance function were divided into Performance Development (PD) (n=54) and Performance Dysfunction (Pdy) (n=43). Using Five Facet Mindfulness Questionnaire (FFMQ) and Young Schema Questionnaire (YSQ-S3), the overall level of mindfulness skills and thinking schemes were moderate. PD athletes were standing out significantly in mindfulness skills and few elements of thinking schemes such as self-sacrificing, unrelenting standards, and entitlement. Meanwhile, Pdy athletes were more likely to be in other side of thinking schemes elements. It can be seen that MCS-SP can be used as a standard reference for identifying athletes' performance functional status and planning for better psychological interventions.

**Keywords:** Multilevel Classification System for Sport Psychology (MCS-SP), Performance Function, Performance Development (PD), Performance Dysfunction (Pdy), MASUM athlete

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## 1. INTRODUCTION

Applied Sport Psychology provides many ideas about psychological skills training (PST) methods to enhance athletes' performance [1, 2, 3]. However, due to the complexity of sport behavior characteristics, Clinical Sport Psychology has coming to play a role to provide a standard method to identify the functionality of an athletes' performance. In the context of athletes' performance enhancement, the goal of PST is to increase fun and to achieve greater self-satisfaction in sport and physical activity [4]. The main factors affecting PST is the expected result of psychological skills and the method of training or techniques used to get the expected psychological skill result [5]. A well-planned PST programmes can affect an athlete performance [6].

Athletes' readiness to participate in PST programme is very important to ensure the achievement of the training programme objectives. Applied Sport Psychology must have more comprehensive scope to cover issues related to the well-being and development of athletes [7, 8, 9]. Although Applied Sport Psychology has contributed a lot in introducing technique and PST that can be used to enhance athlete performance, but there is lack of formal way to distinguish the issues and problems of athletes [10]. Athletes' issues and problems will affect their willingness to participate in PST programme and thus should bring to attention to ensure that the objectives of PST programme in improving athlete performance can be achieved [11]. Thus, Multilevel Classification System for Sport Psychology (MCS-SP) has been proposed to select athletes' category based on their readiness to undergo PST [11]. MCS-SP model was introduced through Sport Psychology Clinical as a standard reference to determine the classification of athletes based on their performance function which consist of Performance Development (PD), Performance Dysfunction (Pdy), Performance Impairment (PI) and Performance Termination (PT) categories.

Semi-Structured Interview of MCS-SP is one of the valuation methods used to determine the classification of the athletes performance. The concept of semi-structured means the process by which a number of critical domains assessed systematically in order to get information about issues or problems, personal history and performance, and the history of the issue. The period of good interview is between 60 to 90 minutes. In addition, a simpler measuring tool may also be used such as Performance Classification Questionnaire (PCQ) [12]. However, the goal of

PCQ is to distinguish PD classification and Pdy only.

MCS-SP is a response to the absence of taxonomical system for the evaluation process, the formation of concepts and structured intervention towards athletes. The type of athlete category and its suitability with the type of intervention is described in Figure 1 [11].

Category	Characteristics	Suggestion
<i>Performance Development</i> (PD):	Psychological skill training requirement to improve the performance become as the main goal. There is no growth factor, transition, behavioral, and interpersonal and intrapersonal factors that could affect performance, or that require the attention of sport psychology practitioners.	PD athletes are strongly encouraged to follow the psychological skill training to improve the skill of self-regulation.
PD-I	In the PD-I category, the development of physical skill still need to be improved. Psychological skill training is needed for the purpose of improving the physical skill and overall performance.	
PD-II	Physical skill is fully developed to a high level, but the psychological skill is needed to maintain an optimal level of performance and consistency.	
<i>Performance Dysfunction</i> (Pdy):	PST requirement is to improve the performance as the first or second goal. Performance may already well developed and consistent, or perhaps still slow and late. However athletes are faced with psychological barriers such as developmental problems, changes, interpersonal, intrapersonal (the issue of the mental scheme establishment, perception, personality and behavioral characteristics) which bring the negative impact on athletes. This factor is indirectly reduced the overall level of psychology and physical behavior either chronically or according to the situation.	Pdy athletes are encouraged to attend counseling programme beforehand and followed with psychological skills training.
PDy-I	External life factors such as the developmental aspect, transition and interpersonal triggered the psychological reactions that result in dysfunction performance.	
PDy-II	Internal life factors such as thinking schemes and behavioral characteristics triggered by the competition environment or competition ques during performance, resulting in dysfunction performance.	
<i>Performance Impairment</i> (PI)	Clinical issues that clearly exist, causing athletes to suffer from emotional depression and extremely behavior unstable, resulting in total decreased of performance. The existence of the clinical issues	PI athletes are encouraged to attend counseling

	<p>cause a severe deterioration of the performance at least in one (usually more) major life domain such as family, interpersonal, social, career or education. Counseling psychological treatment or intensive psychotherapy efforts is used to recover PI. While the performance improvement is the second agenda in the intervention until the clinical issue can be resolved. The use of traditional psychological skill training is seen not giving effective impact due to the existence of obvious clinical issues.</p> <p>There were issues of clinical disorders such as affective disorder, anxiety disorder, eating disorder, alcohol and substance abuse, Post Traumatic Stress Disorder, causing severe damage to the overall function of life and inability to participate in competition.</p> <p>There were issues of failure in self-regulation such as anger disorder/instinct control, drug/alcohol abuse, and domestic violence/relationship, causing significant damage in the major domain of life (like family) and limitation of participation in competition either for short or long duration (such as suspension from the team, expelled from the game, legal action or detention).</p>	<p>and / or psychotherapy without /or with the addition of medicine, then followed with interventions to increase performance.</p>
<p><i>Performance Termination</i> (PT):</p> <p>PT-I</p> <p>PT-II</p>	<p>There were issues related to the career termination due to serious injury, voluntary or forced resignation. Psychological reactions may occur such as anger, depression, and anxiety in the athletes and their families. Athletes can choose to get counseling or specific psychosocial treatment in terms of career and financial planning.</p> <p>Career ending as due to expected factors such as self-choice, age, and natural reduction of physical skills. Psychology reaction shown used to be normal, but some times may indicate a sequence of sub-clinical symptom such as shock, sadness, denial, anger, depression or acceptance.</p> <p>Career ending as due to unforeseen circumstances such as serious injury, or termination without cause of injuries. Effects of psychological reaction are worse than the PT-I such as Acute Stress Reaction, or Post Traumatic Stress Disorder. Treatment needed is a higher intensity.</p>	<p>Athletes are encouraged to follow career counseling programme and counseling psychology.</p>

**Fig.1.** Classification of athletes category based on Multilevel Classification System for Sport Psychology (MCS-SP) [11]

To ensure the success of the sport, athletes' performance must be viewed not only in terms of their physical but also psychological achievements. The function of the individual must always be examined and given appropriate intervention to preserve the health, physical and psychological wellbeing, optimum performance, and also as the mean to prevent, evaluate and reduce performance and personal difficulties. The effectiveness of PST to enhance the ideal level of athletes' performance can be more easily understood through the Integrated Model of Athletic Performance (IMAP) [11]. Based on IMAP model, athletes faced with the demands of internal and external processes that affect the willingness of their competitive behavior during the preparation phase. IMAP define the demands and the performance stimulus as a general and specific requirements to be met by the athlete based on the condition that they have to reach required standard at the end of the performance, while the standard itself is different based on the level of athletes. Therefore, in the preparatory phase, thinking schemes play a very important role as a general response to the demands of performance. Thinking schemes can activate the content of schemata based on the personal characteristics of the athlete, and it determines the athlete performance as functional or dysfunctional. Mental schemes controlling thought and behavior and operates like a radar that detects psychological threats and affects the behavior, thinking and affective [11].

During the presentation phase also, athletes' behavior is regulated by a feedback control system. Feedback control system is a kind of metacognitive processes when athletes identify the relevant aspects of his behavior and systematically customize them to reach the expected standard of behavior. This metacognitive process is equivalent to the concept of mindfulness that is "paying attention in a particular way; on purpose, in the present moment, and non-judgmentally" [13]; or flow and peak experience [14, 15]. Therefore, the ideal performance of functional athlete can be achieved if athletes possess an appropriate level of mindfulness skill during presentation phase [16].

Few studies suggested that there are limitations of the study if the subject is homogenous, which resulted in an increase of the minimum performance [12, 17, 18]. However, if taking into account differences based on MCS-SP, it was found that the performance improvement effects are more noticeable. Other study on the effectiveness of Mindfulness Acceptance Commitment (MAC) in sport performance enhancement, suggested if the study combined the

overall performance improvement of athletes regardless of the treatment or MCS-SP category type, it seems that the performance improvement percent by MAC intervention is similar compared to the study on performance improvement using traditional methods of PST [11]. The study proposed that MAC intervention is more effective if carried out on athletes from the PD-I (Performance-Development I) and PD-II (Performance-Development II) categories which are not under clinical supervision [11].

MCS-SP also used to identify the effects of sub-clinical psychological difficulties towards the intervention ability of Mindfulness Acceptance Commitment (MAC) on the performance [19]. Before the intervention, MCS-SP was used to determine the experimental group. The results showed that the presence and absence of sub-clinical psychological difficulty really produce a moderator effect to the efforts of improving athletes' performance. Other study was conducted on the effectiveness of therapy treatment in Observed and Experiential Integration (OEI) towards the major psychological barrier on the athletes' performance [20]. Subjects were selected among athletes students for the Performance Dysfunction (Pdy) category. The Pdy athletes showed that there are some sub-clinical issues faced by the athletes students. After five phases of data collection, it was found that the OEI therapy treatment, therapeutic relationship between the researcher and the subject, and the subject's perception is the key variable on the change of athlete performance.

Therefore, the current study was conducted to test the effectiveness of MCS-SP for athletes' performance functional evaluation among MASUM athletes at University Pendidikan Sultan Idris Malaysia. The aim of the study is to determine the classification of athletes, and to identify the level of athletes' performance in terms of mindfulness skills and thinking schemes. Based on the MCS-SP model, it is assumed that the Performance Development (PD) athletes showed a higher level of mindfulness compared to Performance Dysfunction (Pdy) athlete. In addition, it is also assumed that intrapersonal issue such as thinking scheme is more likely prominent among Pdy athletes compared to PD athletes.

## 2. RESEARCH METHODOLOGY

### 2.1. Subjects

The subjects were athletes from Performance Development (PD) (n=54) and Performance Dysfunction (Pdy) (n=43) categories. Classification of athletes' performance function was obtained through the Performance Classification Questionnaire (PCQ). All the subjects were from UPSI MASUM athletes who participated in MASUM 2015 tournament. Of the total athlete, the number of male athletes was 70 (72.2%), while female athletes were 27 (27.8%). The average age of the overall athletes is 22.6 (SD = 1.37). Whereas, the average years of involvement in sport since school period to university is 6:53 (SD = 3.79).

### 2.2. Instrument

This study used Performance Classification Questionnaire (PCQ) [12] to distinguish athletes into the categories of Performance Development (PD) and Performance Dysfunction (Pdy). PCQ is a kind of self-assessment, which contains 10 Likert scale items. The scoring method is to add all the scores (items 5 and 7 shall be reversed). A score of less than 30 indicated the PD athletes, while a score of 30 and above is Pdy athletes. Cronbach's alpha to determine the internal reliability of the questionnaire for this study was 0.82.

Five Facet Mindfulness Questionnaire (FFMQ) also has been used to measure mindfulness skill [21]. FFMQ is a kind of self-report contains 39 likert scale questions that measure the skills of mindfulness. There are five important factors in mindfulness skills, namely observing, describing, acting with awareness, nonjudging, and nonreactivity. The higher score reflects the ability of mindfulness. Reliability report showed that the Cronbach's alpha ranging from 0.75 to 0.91 [22]. FFMQ questionnaire contains a sufficient degree of validity [21]. FFMQ questionnaire translated into Bahasa Melayu by using the back to back translation.

Other than FFMQ, Young Schema Questionnaire (YSQ-S3) has also been used to measure thinking schemes [23]. YSQ-S3 contains 90 questions with answers of 6 points Likert scale starting from 1 (very inaccurate relating to myself) to 6 (very accurate relating to myself). Cronbach's alpha value for YSQ-S3 is also high ranging from 0.72 to 0.93. YSQ-S3 is translated into Bahasa Melayu by using the back to back translation.

### 2.3. Procedure

For the success of this study, the researchers obtained permission from the UPSI Sport Center to engage UPSI student who involved in MASUM 2015 sport tournaments as research subjects. Initially, only 100 athletes committed to involve in this study by giving consent verbally to fill out the questionnaire. However, three athletes who have demonstrated the characteristics of Performance Termination (PT) has been removed from the potential subjects list. Then, the remaining 97 athletes were given a questionnaire of Performance Classification Questionnaire (PCQ), Five Facet Mindfulness Questionnaire (FFMQ) and Young Schema Questionnaire (YSQ-S3).

## 3. RESEARCH RESULT

### 3.1. Performance Function

The first question in this study was to determine the frequency of the subject performance based on classification function. Data were analyzed using the number and percentage. Table 1 shows a total of 54 (55.7%) athletes are from the Performance Development (PD) category while the rest are 43 (44.3%) athletes from the category of Performance Dysfunction (Pdy).

**Table 1.** The frequency of the subject based on the performance of athletes.

<b>Performance Function Category</b>	<b>Frequency</b>
<i>Performance Development (PD)</i>	54 (55.7%)
<i>Performance Dysfunction (Pdy)</i>	43 (44.3%)

### 3.2. Mindfulness

The second question in this study was to determine the mindfulness skill level for the whole subject. Data from Five Facet Mindfulness Questionnaire (FFMQ) were analyzed descriptively using mean and standard deviation. Table 2 shows the whole mean scores of mindfulness for the subject is at a moderate level.

**Table 2.** Mean and standard deviation of the mindfulness skill level

Mindfulness Subscales	Score		
	<i>n</i>	<i>M</i>	<i>SD</i>
Observing	97	29.45	5.11
Describing	97	28.46	5.16
Acting with awareness	97	25.75	7.84
Nonjudging	97	25.26	6.52
Nonreactivity	97	28.43	7.25
Total Mindfulness	97	21.23	5.44

### 3.3. Thinking Schemes

The third question in this study was to determine thinking schemes level for the entire subjects. Data from the Young Schema Questionnaire (YSQ-S3) questionnaire were analyzed using mean and standard deviation [23]. Table 3 shows that all 18 types of thinking schemes exhibited by athletes of UPSI MASUM are at moderate level.

**Table 3.** Mean and standard deviation of thinking schemes

Elements of Thinking Scheme	Score		
	<i>n</i>	<i>M</i>	<i>SD</i>
1. Emotional deprivation	97	21.39	4.25
2. Abandonment	97	21.81	4.29
3. Mistrust/abuse	97	20.79	3.24
4. Social isolation	97	17.15	3.04
5. Defectiveness/shame	97	17.38	2.87
6. Failure	97	17.89	3.45
7. Dependence/incompetence	97	15.31	2.85

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8. Vulnerability to harm or illness	97	16.30	2.90
9. Enmeshment	97	13.20	2.56
10. Subjugation	97	14.44	3.20
11. Self-sacrifice	97	16.72	2.36
12. Emotional inhibition	97	14.52	3.76
13. Unrelenting standard	97	16.85	1.87
14. Entitlement	97	16.62	2.32
15. Insufficient self-control/self-discipline	97	15.83	2.87
16. Approval research	97	17.35	2.95
17. Negativity/pessimism	97	15.94	2.72
18. Punitiveness	97	15.28	2.57

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### 3.4. Mindfulness skill based on performance function classification

Based on the Multilevel Classification System for Sport Psychology (MCS-SP), it was assumed in the study that the PD athlete showed a higher level of mindfulness compared to Pdy athlete. Independent Samples T-Test is used to verify this assumption. There were a significant differences between group,  $t(95) = 2.998$ ,  $p = 0.03$ ,  $d = 0.60$ , *moderate effect size* for observing skill;  $t(95) = 2.381$ ,  $p = 0.019$ ,  $d = 0.40$ , *small effect size* for describing skill;  $t(95) = 2.897$ ,  $p = 0.05$ ,  $d = 0.60$ , *moderate effect size* for nonjudging;  $t(95) = 2.689$ ,  $p = 0.08$ ,  $d = 0.80$ , *large effect size* for nonreactivity; and finally  $t(95) = 3.625$ ,  $p = 0.000$ ,  $d = 0.80$ , *large effect size* for the whole score of mindfulness. The result confirmed that the PD athletes were significantly prominent in terms of observing, describing, nonjudging, nonreactivity, and total mindfulness skill compared to Pdy athletes.

**Table 4.** Mean scores for mindfulness skills between groups

Mindfulness Subscales	Performance Functional Classification		<i>t</i>	<i>d</i>
	PD	Pdy		
Observing	30.74 ± 5.57	27.84 ± 3.96	2.998*	0.60
Describing	29.52 ± 5.62	27.14 ± 4.21	2.381*	0.40
Acting with awareness	27.00 ± 8.22	24.20 ± 7.12	1.776	0.30
Nonjudging	26.91 ± 6.29	23.20 ± 6.28	2.897*	0.60
Nonreactivity	30.09 ± 7.86	26.35 ± 5.85	2.689*	0.60
Total Mindfulness	22.83 ± 6.20	19.21 ± 3.43	3.652*	0.80

### 3.5. Thinking schemes based on performance function classification

This study also assumes that intrapersonal issues such as thinking schemes is more prevalent among Pdy athletes compared to PD athletes based on the Multilevel Classification System for Sport Psychology (MCS-SP) model. There are 18 thinking scheme sub-scales. The data were analyzed using Independent Samples T-Test to confirm this assumption. Table 5 shows that there were significant difference between groups in 17 sub-scales of thinking scheme, those are emotional deprivation,  $t(95) = -8.636$ ,  $p = 0.000$ ,  $d = 1.00$ , *large effect size*; abandonment,  $t(95) = -7.735$ ,  $p = 0.000$ ,  $d = 1.00$ , *large effect size*; social isolation,  $t(95) = -6.886$ ,  $p = 0.000$ ,  $d = 1.00$ , *large effect size*; defectiveness/shame,  $t(95) = -6.886$ ,  $p = 0.000$ ,  $d = 1.00$ , *large effect size*; failure,  $t(95) = -3.818$ ,  $p = 0.000$ ,  $d = 0.80$ , *large effect size*; dependence/incompetence,  $t(95) = -3.818$ ,  $p = 0.000$ ,  $d = 1.00$ , *large effect size*; vulnerability to harm or illness,  $t(95) = -5.750$ ,  $p = 0.000$ ,  $d = 1.00$ , *large effect size*; enmeshment,  $t(95) = -2.586$ ,  $p = 0.011$ ,  $d = 0.50$ , *moderate effect size*; subjugation,  $t(95) = -7.170$ ,  $p = 0.000$ ,  $d = 1.00$ , *large effect size*; self-sacrifice,  $t(95) = 4.005$ ,  $p = 0.000$ ,  $d = 0.80$ , *large effect size*; emotional inhibition,  $t(95) = -11.428$ ,  $p = 0.000$ ,  $d = 2.0$ , *large effect size*; unrelenting standard,  $t(95) = 3.829$ ,  $p = 0.00$ ,  $d = 0.7$ , *moderate effect size*; and entitlement,  $t(95) = 5.023$ ,  $p = 0.000$ ,  $d = 1.00$ , *large effect size*. The result confirmed that the Pdy athletes were more significantly prominent compared to PD athletes in terms of emotional deprivation, abandonment, social isolation, defectiveness/shame, failure, dependence/incompetence,

vulnerability to harm or illness, enmeshment, subjugation, emotional inhibition, insufficient self-control/self-discipline, approval research, negativity/pessimism, and punitiveness. However, in term of self-sacrifice, unrelenting standard and entitlement elements, there were more prevalent towards PD compared to Pdy athletes.

**Table 5.** Mean scores for thinking schemes between groups

Elements of Thinking Scheme	Performance Functional Classification		<i>t</i>	<i>d</i>
	PD	Pdy		
1. Emotional deprivation	18.89 ± 3.32	24.53 ± 3.04	-8.636*	1.00
2. Abandonment	19.44 ± 2.52	24.79 ± 4.22	-7.735*	1.00
3. Mistrust/abuse	21.20 ± 3.46	20.28 ± 2.91	1.402	0.30
4. Social isolation	15.72 ± 2.58	18.95 ± 2.63	-6.886*	1.00
5. Defectiveness/shame	15.90 ± 2.31	19.23 ± 2.43	-6.886*	1.00
6. Failure	16.78 ± 3.55	19.30 ± 2.78	-3.818*	0.80
7. Dependence/incompetence	13.98 ± 2.63	17.00 ± 2.18	-6.045*	1.00
8. Vulnerability to harm or illness	15.00 ± 2.74	17.95 ± 2.19	-5.750*	1.00
9. Enmeshment	12.65 ± 2.92	13.91 ± 1.85	-2.586*	0.50
10. Subjugation	12.76 ± 2.94	16.56 ± 2.07	-7.170*	1.0
11. Self-sacrifice	17.52 ± 2.24	15.72 ± 2.14	4.005*	0.80
12. Emotional inhibition	11.98 ± 2.49	17.72 ± 2.41	-11.428*	2.0
13. Unrelenting standard	17.46 ± 1.65	16.09 ± 1.87	3.829*	0.70
14. Entitlement	17.57 ± 2.35	15.44 ± 1.67	5.023*	1.00

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15. Insufficient self-control/self-discipline	14.02 ± 2.11	18.12 ± 1.92	-9.903*	2.00
16. Approval research	16.33 ± 2.91	18.63 ± 2.52	-4.095*	0.80
17. Negativity/pessimism	14.50 ± 2.14	17.77 ± 2.27	-7.272*	1.00
18. Punitiveness	13.57 ± 1.72	17.44 ± 1.69	-11.066*	2.00

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#### 4. DISCUSSION

Based on descriptive studies, it is clearly show that the measuring tool of Performance Classification Questionnaire (PCQ) are capable in determining the classification of Performance Development (PD) and Performance Dysfunction (Pdy) based on Multilevel Classification System for Sport Psychology (MCS -SP) model. As proposed, PCQ can be used to obtain information about the athlete performance [15]. PCQ had been used for the same purpose by other study for the selection of PD athlete as their research samples [24] [25]. Moreover, few researchers had confirmed that the need to identify the athletes' performance function category is very important to ensure the appropriateness of PST intervention in performance enhancement [11, 15, 19, 20, 25, 26].

In addition, the study also found that mindfulness skills level of the entire subject is moderate. This study also supports the proposed model of MCS-PD SP that PD athletes should show higher mindfulness skill level than Pdy athletes. Based on the PD athlete criteria, the main issue of PD athletes is only related to the improvement of physical performance because athletes do not experience any significant problems in terms of development, behavioral changes, interpersonal and intrapersonal which could affect their physical performance. For PD athlete, mindfulness skills are needed to achieve peak performance because the functional of peak performance will be produced only when the process of self-assessment, focusing on internal and external threats, and focusings on the expected results of the performance is at minimal level. Therefore, PD athletes are those who suppose to achieved peak performance in sport [14, 15] and should have a high mindfulnes skills [16]. This is also supported by the

results of another study which suggested that the feature of high mindfulness was associated with high performance [27].

Finally, the study also found that the level of thinking scheme for the entire subjects is moderate. However, the initial assumption that these intrapersonal issues should be more prominent among Pdy athlete compared to PD athlete was slightly contradicted with the proposed model of MCS-SP. The model explained that Pdy athletes not only has the level of performance that might already well developed and consistent, or perhaps still slow and late, however Pdy athletes also dealing with psychological barriers such as developmental problems, changes, interpersonal, intrapersonal (the issue of the thinking scheme establishment, perception, personality and behavioral characteristics) which affect the athletes negatively [15]. In fact, these characteristics of Pdy athlete are very different compared to PD athletes who should be free from the problem of development, behavior, interpersonal and intrapersonal issue that can affect their physical performance significantly. However, from the finding of this study, although athletes are categorized as PD, the tendency of having thinking scheme such as self-sacrifice, unrelenting standard and entitlement were higher than Pdy athlete. This was something that might be misinterpreted or over interpret that can cause affective reaction and behavioral frustration, anxiety, dysfunction performance and eventually withdraw from the sport [11]. Athletes who possess athlete's identity schemes that are too high and exclusive have a high probability of having a negative affective impact and implications of injury [28].

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