

Sport Well-being as a Mediator of the Relationship between Psychological Skills and General Well-being

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In the Olympic sport competition field to pursue the fastest speed and strongest body, anticipating athletes are continuously requested to expand physical body limit and they hope to gain the final victory. However, some sport psychologists started to find one problem in recent year, i.e. athletes frequently practiced consistent exercise to pursue perfect performance, but these over-loading trainings were beyond their capable physical loading on their suitable ages, then affect body, physical as well as psychological health development, and further sacrifice personal growth (Miller & Kerr, 2002). After all, athletic carrier period is short, but the life plan belongs a long period. Based on these facts, some sport psychologists suggest that athletes should utilize athletic characteristics and advantages to achieve personal growth when they pursue perfect performance.

Recently, our national athletes Randy Lu and Yang-Ni Tseng did excellent performance records in the international stages. These sport events could help to promote the national sport values. However, the harmful affairs such as signing sport gambling, involving improper places by national baseball athletes, and fighting by basketball athletes not only influence national athletic recognition and development but also generate negative images by the general public people in our society. In fact, national athletes are very smart, otherwise they could not compete with other athletes in the sport field. In general, because athletes speak less, expressing ability is not strong, and resume preparation is not quite well in the

working field so they become backward and feel frustration in the working field and they cannot face general public. Furthermore, after Taiwan athletes leave the “sport” road, most decide to return to schools as teachers or coaches. Nevertheless, the teaching position in the schools is limited and adding chance is few. How are other athletes going? Moreover, these athletes have the rest of their lives and family life. How do they do for the next step? Therefore, the current urgent topic is to assist athletes to transform sport skills or experiences into daily life so that they can have better adjusting ability.

Previous research indicated that individuals owning more applying skills could increase their psychological well-being and self-efficacy (Boehmer, Luszczynska & Schwarzer, 2007). Thus, if one athlete can really succeed in transforming sport psychological skills into life skills, this represented that they owned better life applying skills. Based on prior study, athletes owning better life skills had higher evaluation and satisfaction for themselves as well as owned general well-being. Therefore, our research is to use general well-being as indication of evaluating life skills for athletes. That is, athletes have better life skills if they have good general well-being. The contrary indication is opposite. In addition, one research exploring the involvement of health exercise sport in influence on labor health exercise sport well-being, social psychological functions and general well-being (Sjogren et al., 2006) found that these anticipating labors became to increase body movement well-being after accepting health exercise involvement. Thus, owning better sport experiences more possibly increases happy sense in sports.

Therefore, the purposes of this study are to explore the sport well-being is the mediating variable of sport psychological skills and general well-being and, further; understand the transformation mechanism from sport psychological skills into life skills. That is, the better psychological skills athletes have, the more likely they have

beneficial sport well-being to improve general well-being.

Based on the above description, the research purposes, research questions, research hypothesis, and the important term definitions are listed as follows:

I. Research Purposes

- (1) Understanding the relationship between psychological skills and each item in the general well-being among athletes.
- (2) Understanding the relationship between psychological skills and sport well-being among athletes.
- (3) Understanding the relationship between sport well-being and each item in the general well-being among athletes.
- (4) Exploring whether sport well-being is the mediating variable of sport psychological skills and each item of general well-being, and then further understanding the transformation mechanism from sport psychological skills into life skills.

II. Research Questions

- (1) What is the relation between sport psychological skills and each item of general well-being among athletes?
- (2) What is the relation between sport psychological skills and sport well-being among athletes?
- (3) What is the relation between sport well-being and each item of general well-being among athletes?
- (4) Whether the sport well-being is the mediating variable of sport psychological skills and each item of general well-being?

III. Research Hypothesis

Sport well-being is the mediating variable of sport psychological skills and each item of general well-being (physical health, psychology, social relation and

environment).

IV. Term Definition

- (1) Psychological Skills: the ability is formed by athletes through trainings and practices and internal potential skills are shaped in the course of human brain operation. Such ability can influence personal psychological process and psychological operating system of psychological status. It is also related to human life, learning, work, labor, physical and mental health as well as physical and mental potential.
- (2) Sport Well-being: the satisfaction and happy sense is obtained by athletes from sport fields. The previous research stated that sport persistence, cheerfulness and performance were used as indication of sport well-being (Ryan & Frederick, 2007). Furthermore, previous study also used subjective vitality and sport enjoyment to measure sport well-being (Reinboth, Duda & Ntoumanis, 2004) .
 - (i) Subjective Vitality : personal evaluation of psychological status related to his/her ideal experience (Diener & Lucas, 2000).
 - (ii) Sport Enjoyment: happy sense and joy from anticipating sports
- (3) General Well-Being : general evaluation according to subjective standards on life satisfaction degree, positive and negative emotion feelings by individuals. It consists of three parts—life satisfaction, positive emotion and negative emotion (Andrew & Withey, 1976). Therefore, individual evaluation on general well-being should consider both layers of personal recognition and emotion together. The preceding layer is personal recognition related to perception evaluation on individual life quality, i.e., the degree of satisfaction judgment for

personal life in general. The subsequent layer is emotional experiences in individual life including positive emotion (collaboration, optimism, self-esteem, joy, etc.) and negative emotion (unease, anxiety, nervousness, etc.). When individual has higher degree of life satisfaction, feels more positive emotion and less negative emotion, his/her general well-being becomes stronger.

Method

1. Participants

The testers for this study are from fourteen kinds of sport teams of national physical education university. The total number of these athletes is 360 (247 mans and 113 females). This study uses the questionnaire method and testers of sport teams anticipate questionnaire survey process. The questionnaire returning rate is 100%. The total distribution number of questionnaire for fourteen sport teams is 368 including 7 ineffective questionnaires. So the effective questionnaire rate is 98%.

(1) Athletic Psychological Skills Inventory (APSI).

The APSI form (Chiou & Chi, 2001) was developed to measure the effects of psychological skills for athletes. According to the APSI form, the psychological skill inventory consists of five subscale scores: coping with adversity and peaking under pressure, motivation, concentration, confidence and coachability. The 31 items in APSI used a five-point Likert-type format ranging from 1 (almost never) to 5 (almost always). To examine the frequency of the athlete's psychological behaviors, this inventory required the respondents to rate how often they experienced the same situation. For example, one item in the subscale of Coping with Adversity is, "I maintain emotional control no matter how things are going for me." The scale would be summed to yield a total score of psychological skills. Thus, a high total

score of psychological skills means that a person has a high level of psychological skills. Conversely, a low score means that a person has a low level of psychological skills. Chiou and Chi (2001) reported that the APSI had a high internal consistency and reliability (Cronbach's alpha) of .96 and the Cronbach's alpha coefficients for five subscales were from .75 to .88. In the present study, the full scale reliability of APSI were acceptable with Cronbach's alpha coefficient of .72.

(2) Sport Well-being Inventory

This study uses the author edition version of sport well-being inventory by referencing foreign sport well-being related documents. The whole inventory table contains twelve questions including two sub-scales: one sub-scale relating to sport psychological experiences with 7 questions and the other sub-scale relating to sport joy with 5 questions. The description of invention information is as follows.

(i) Sport psychological experience : This sub-scale is to measure the degree of subjective vitality expressed by athletes in sport situations. The represents sport psychological experience of athletes. The answer measurement of this inventory selects 7-point Likert inventory method and its score range is from 7 scores (completely being applied to me) to 1 score (not completely being applied to me). For example, I feel energetic and have vigor and strength. If athletes obtain higher scores in this sub-inventory, this means he/she has better quality of sport psychological experience.

(ii) Sport enjoyment : This sub-scale is to measure joyfulness of athletes. The answer measurement of this inventory selects 5-point Likert inventory method and its score range is from 5 scores (completely agree) to 1 score (not completely agree). For example, I feel anticipating sports is cheerful. If athletes obtain higher scores in this sub-inventory, this means he/she has better sport joy.

In order to improve the reliability and effectiveness of sport well-being inventory

during formal testing, this study executes criterion validity test. The previous researcher used sport well-being inventory and basic requirement questionnaire of happy sense on health exercise sport to conduct correlation analysis test. His conclusion expressed obvious positive correlation between the above two inventories ($r = .53$). This means that this study using sport well-being inventory really measures happy sense of athletes and confirms that this inventory has suitable reliability and effectiveness.

(3) World Health Organization Quality of Life (WHOQOL-BREF)

Based on the previous research, life quality is related to the subjective evaluation of personal psychological well-being) and it had multi-dimensional degrees (Baker, 1995). The investigation of life quality by WHO (1995) includes six major items—body, mind, independent degree, social relation, environment, spirit, religion and personal belief, etc. So this study would like to use World Health Organization Quality of Life (WHOQOL-BREF) to measure general well-being of athletes (Giao , 2005).

There are four major dimensions of life quality related with health in the questionnaire: physical health dimension, mental health dimension, social relation dimension and environment dimension. The life quality questionnaire has 28 questions and the tester answer important score weighting personally. Its score weighting range is from one score (no importance) to 5 scores (very important weighting). It comprise four sub-scales—physical health sub-scale with 7 questions, psychology sub-scale with 6 questions, social relation sub-scale with 4 questions and environment sub-scale with 9 questions.

1. Physical health : It indicates pain, discomfort, vigor, tiredness, sleep, rest, movement ability, daily life activity, drug and medication dependence as well as work capability, etc.

2. Psychology : It indicates positive feeling, thinking, learning, memory, concentration, self-esteem, body image, appearance, negative feeling, spirit, religion and personal belief, etc.

3. Social relationship : It indicates personal relationship, actual social support, sex life, being respected and accepted, etc.

4. Environment : It indicates body safety, shelter, house surrounding, financial resource, health, social care, chance of obtaining new information and skills, chance of joining entertainment and leisure activity, pollution, noise, transportation, climate, and food, etc.

Because general well-being has multi-dimensions, this study will not calculate to add total scores of four dimensions together as general well-being. On the contrary, this study calculates scores of each dimension and then analyses these four dimensions --physical health, psychology, social relation and environment separately to understand the life quality of different dimensions for athletes.

Results

1. Correlation analysis between sport psychological skills and sport well-being

This study employs total score of sport psychological skills and 5 sub-scale scores (coping with adversity and peaking under pressure, motivation, concentration, confidence as well as coachability) as well as total score of sport well-being and 2 sub-scale scores (sport psychological experience and sport enjoyment) to do correlation analysis. According to Table 1, there is high positive relation between sport psychological skills and sport well-being ($r = .62, p < .01$). That is, athletes who have better psychological skills are easier to obtain happy sense during sport activity. In addition, compared to sport psychological skills and each sub-scale of sport well-being, the motivation sub-scale has above medium level of positive correlation with sport psychological experience ($r = .48, p < .01$) and sport joy

sub-scale ($r = .53$, $p < .01$) respectively. Namely, higher internal motivation athletes have, easier they are to have better sport psychological experience and to find sport joy. Moreover, stress management and adversity adjustment subscale has closely medium level of positive correlation to sport psychological experience ($r = .48$, $p < .01$) and ($r = .42$, $p < .01$) respectively. That is to say, athletes who have finer stress management and adversity adjustment ability are easier to get positive sport psychological experience and sport joy.

Table 1 Correlation analysis between sport psychological skills and sport well-being

Variables	Psychological skills Total score	Coping with Adversity and Peaking under Pressure	Motivation	Concentration	Confidence	Coachability
Sport well-being Total score	.62**	.51**	.55**	.17**	.25*	.31**
Sport psychological experience	.55**	.48**	.48**	.14**	.40**	.27**
Sport Enjoyment	.57**	.42**	.53**	.17**	.44**	.31**

** $p < .01$

2. Correlation analysis between Sport psychological skills and sub-scales of general well-being

This study performs correlation analysis using total score of sport psychological skills and 5 sub-scale scores (coping with adversity and peaking under pressure, motivation, concentration, confidence as well as coachability) with total score of general well-being and 4 subscale scores (physical health, psychology, social

relationship and environment). Table 2 shows that sport psychological skills positively correlate to physical health ($r = .37, p < .01$), psychology ($r = .49, p < .01$), social relationship ($r = .33, p < .01$) and environment ($r = .40, p < .01$) with nearly medium level, respectively. That is, athletes who have better psychological skill are likely to have better physical health, positive thinking, secure housing shelter and beneficial human relationship.

Table2 Correlation analysis between sport psychological skills and general well-being

Variables	Psychological skills Total score	Coping with Adversity and Peaking under Pressure	Motivation	Concentration	Confidence	Coachability
Physical health	.37**	.27**	.34**	.11**	.24**	.24**
Psychology	.49**	.42**	.38**	.19**	.44**	.22**
Social relationship	.33**	.28**	.25**	.15**	.27**	.18**
Environment	.40**	.26**	.37**	.12**	.30**	.28**

** $p < .01$

3. Correlation analysis among sport well-being and sub-scales of general well-being

This study analyzes the total score of sport well-being and 2 sub-scale scores (sport psychological experience & sport enjoyment) as well as 4 sub-scale scores of general well-being (physical health, psychology, social relationship & environment) by using correlation methods. As shown in table 3, sport well-being has the medium level of positive correlation to physical health ($r = .49, p < .01$), psychology

($r = .57, p < .01$), social relationship ($r = .45, p < .01$) and environment ($r = .46, p < .01$), respectively. That is, athletes who more possibly obtain happy sense in sport activity have better body condition, more positive thinking, more excellent human interaction and more pleasant social environment and security.

Table3 Correlation analysis between sport well-being and general well-being

Variables	Physical health	Psychology	Social relationship	Environment
Sport well-being	.49**	.57**	.45**	.46**
Total score				
Sport psychological experience	.42**	.48**	.34**	.46**
Sport Enjoyment	.51**	.60**	.45**	.51**

** $p < .01$

4. Mediating Variable Test

This study chooses the suggestions of Baron and Kenny (1986) and uses hierarchal regression analysis to determine whether the third variable is the mediating variable. However, the significant criterion to determine the mediating variable in hierarchal regression analysis is that three variables (independent variables, mediating variables and dependent variables) must have the obvious correlation. Baron and Kenny (1986) proposed the hierarchal regression analysis with 3 examination steps: firstly the regression probing of independent variables and dependent variables, secondly the regression probing of mediating variable and independent variables, thirdly controlling the relation of mediating variable and dependent variables and then performing regression analysis of independent variables and dependent variables. If the correlation between independent variables and dependent variables is not obvious

anymore, the third variable could be judged as complete mediating variable.

Nevertheless, if independent variables and dependent variables have noticeable correlation but correlation coefficient is reduced, the third variable could be judged as partial mediating variable.

Because this study has 4 depend variables (physical health, psychology, social relationship, environment), there are 4 mediating variable analyses. These four analyses are listed as follows:

(A) The mediating relation testing of sport psychological skills, sport well-being and physical health

Table 4 The mediating relation testing of sport psychological skills, sport well-being and physical health

	R	R ²	R ² change	Beta
Analysis I : Physical health vs. sport psychological skills	.37	.14**		.37**
Analysis II : Sport well-being vs. sport psychological skills	.62	.38**		.62**
Analysis III :				
Step 1 Physical health vs. sport well-being	.51	.26**		.45**
Step 2 Physical health vs. sport psychological skills	.51	.26**	.005	.09

Table 4 reveals that each analysis and step of the mediating variable test is compatible with the hypothesis of Baron and Kenny (1986). After controlling the relation of physical health to sport well-being, sport psychological skills are not correlated with physical health obviously ($\beta = .089$). So sport well-being is the complete mediating variable of sport psychological skills and physical health. As we see one athlete with excellent psychological skills, this athlete also obtains happy sense by such resource in sport activity and more importantly he/she owns healthy

body condition, this could explain that athletes can transform psychological skills into life skills applied in daily life.

(B) The mediating relation testing of sport psychological skills, sport well-being and psychology

Table 5 The mediating relation testing of sport psychological skills, sport well-being and psychology

	R	R ²	R ² change	Beta
Analysis I : Psychology vs. sport psychological skills	.49	.24**		.49**
Analysis II : Sport well-being vs. sport psychological skills	.62	.38**		.62**
Analysis III :				
Step 1 psychology vs. sport well-being	.60	.36**		.48**
Step 2 psychology vs. sport psychological skills	.62	.38**	.024	.20**

Based on the results of table 5, each step also fit the hypothesis of the mediating variable test by Baron and Kenny (1986). However, the step 2 results of analysis III are apparent. This means psychology is not the complete mediating variable of sport psychological skills and general well-being. These results only indicate partial mediating variable, i.e., there is possibly other variables mediate the relation between sport psychological skills and general well-being in addition to psychology variable.

(C) The mediating relation testing of sport psychological skills, sport well-being and social relationship

Table 6 The mediating relation testing of sport psychological skills, sport well-being and social relationship

	R	R ²	R ² change	Beta
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Analysis I :				
Social relationship vs. sport psychological skills	.33	.11**		.33**
Analysis II :				
Sport well-being vs. sport psychological skills	.62	.38**		.62**
Analysis III :				
Step 1 Social relationship vs. sport well-being	.45	.21**		.40**
Step 2 Social relationship vs. sport psychological skills	.46	.21**	.00	.08

The mediating variable test in each analysis and step of Table 6 meets the hypothesis of Baron and Kenny (1986). After the control of social relationship versus sport well-being, the correlation between sport psychological skills and social relationship is not apparent ($\beta = .082$). Thus, sport well-being is the complete mediating variable of sport psychological skills and social relationship. In other words, the sport well-being is the transformation mechanism of sport psychological skills into life skills based on the above situations.

(D) The mediating relation testing of sport psychological skills, sport well-being and environment

Table 7 The mediating relation testing of sport psychological skills, sport well-being and environment

	R	R ²	R ² change	Beta
Analysis I :				
Environment vs. sport psychological skills	.40	.16**		.40**
Analysis II :				
Sport well-being vs. sport psychological skills	.62	.38**		.62**
Analysis III :				
Step 1 Environment vs. Sport well-being	.51	.26**		.42**
Step 2 Environment vs. Sport psychological skills	.52	.27**	.01	.14

The mediating variable test in each analysis and step of Table 7 is compatible to the hypothesis of Baron and Kenny (1986). After the monitor of environment versus sport well-being, the correlation of Sport psychological skills to environment is not evident ($\beta = .142$). Thus, sport well-being is the complete mediating variable between sport psychological skills and environment.

Discussion

1. Correlation between sport psychological skills and sport well-being

The results of this study show sport psychological skills apparently and positively correlate to sport well-being with above medium level ($r = .62$). This means athletes with better sport psychological skills are easier to obtain happy sense during sport anticipation process. The sport psychological skills represent the learning capability. Athletes make use of psychological skills not only to enhance sport performance but also to improve adjustment ability on adversity. The concept of sport well-being which means happy sense or satisfaction gained by sport anticipation is similar to three kinds of basic demand for self-determination theory. The five subscales of sport psychological skills used in this study are stress management and adversity adjustment, motivation, concentration, confidence and coaching ability. The two subscales of sport well-being are sport psychological experience and sport enjoyment

On the other hand, this study also finds that only stress management and adversity adjustment ($r = .51$) as well as motivation ($r = .55$) have positive correlation to sport well-being with above medium level in sub-scales of sport psychological skills. The other three subscales –concentration ($r = .17$), confidence ($r = .25$) and coaching ability ($r = .31$) have lower and positive correlation. However, as these 5 subscales of sport psychological skill are added together, the total score has relatively higher coefficient 0.62 with above medium level of positive correlation. Why do the total score correlation of sport psychological skills and the correlation of its subscales have such big difference? Probably because the variable ideas of sport well-being include sport joy and sport psychological experience, these two ideas are comparably not related to concentration and coaching ability and the lower correlation results are reasonable. The meaning of confidence in this study

indicates that athletes are sure for their sport techniques and emphasize sport performance. This concept is not related to psychological experiences and sport joy emphasized in sport well-being. Therefore, its positive correlation result is lower.

2. Correlation analysis between Sport psychological skills and sub-scales of general well-being

This study shows that sport psychological skills are obviously and positively correlated to general well-being. Their correlation coefficients are respectively 0.37 for physical health, 0.49 for psychology, 0.33 for social relationship and 0.40 for environment. The major sport psychological skills are sport situation and context. General well-being emphasizes ordinary situation and context. The difference between the situation of two variables and context is possible to result in lower correlation. Because of such lower correlation, the previous research suggested future investigations may consider the existence of mediation variables in sport psychological skills and general self-esteem. Consistently, the results are compatible to previous research outcomes (Smith et al., 1994).

Although sport psychological skills have lower positive correlation to subscales of general well-being, the correlation coefficient of sport psychological skills versus psychology subscale ($r = .49$) is close to 0.50. This is possibly due to positive feelings, thinking and learning, etc. Because such concepts are closer to the situations of psychological skills, the positive correlation results are higher. Similarly, compared to other sport psychological skills, the correlation between concentration and subscales of general well-being is the lowest. This result is well-matched to the correlation of sport psychological skills and sport well-being.

3. Correlation analysis among sport well-being and sub-scales of general well-being

The results of this study illustrates that sport well-being has positive correlation

with obvious medium level to physical health ($r = .49$), psychology ($r = .57$), social relationship ($r = .45$) and environment ($r = .46$). These results confirm that happy sense is able to be generalized to such happy sense can be applied to different cases. These results are also compatible to those of previous research. Thus, how to assist athletes to obtain happy sense is very important.

4. Sport well-being as the mediating variable test between sport psychological skills and dimensions of general well-being

After this study examines that the sport well-being is the mediating variable between sport psychological skills and subscales of general well-being, this study finds that sport well-being is the complete mediating variable of sport psychological skills versus physical health, social relationship and environment. But sport well-being is the partial mediating variable between sport psychological skills and psychology subscale. Therefore, for athletes with better sport psychological skills, sport psychological skills can influence the mechanism of general well-being. Since athletes have better sport psychological skills and then gain happy sense in sport activity, they are likely to transfer happy sense to such statuses of daily life as better body condition, progressive human relationship, fuller financial resources, health and social care. Reversely, athletes with poor psychological skills are easy to feel nervous, have weak performance and sport well-being. This results in dislike of athletic rule, passive and feeble attitudes, and dislike of mutual interaction.

Conclusions and Suggestions

1. Conclusions

The purposes of this study are to explore whether sport well-being is the mediating variable of sport psychological skills and each category of general well-being (physical health, psychology, social relationship & environment). Furthermore, its purposes are to understand the transformation mechanism of sport

psychological skills into life skills. Based on the finding of this study, the conclusions are listed as follows:

Once one athlete possess outstanding psychological skills which cause him/her to obtain happy sense during sport activity, he/she fosters healthy body or excellent human relationship, or safe housing insurance, and owns more chances to join leisure and entertainment, this proves that this athletes can apply the psychological skills obtained or learned from sport experiences to daily life. These skills which are used to increase sport performance can work as social adjustment of daily life.

2. Suggestions

(1) When coaches and sport consultants teach athlete psychological skills, they should assist athletes to obtain happy sense, to transform sport psychological skills into daily life and then promote the general well-being of athletes besides helping athletes enhance sport performance.

(2) In addition to learning excellent sport psychological skills, athletes should work out to pursue happy sense in sport activity, increase psychological experiences of sport anticipation and joy, and more feasibly apply the transformation of psychological skills and life skills to daily life.

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