

# The Study Based on Cross-theory Model and the Application in Physical Exercising Behavior of Contemporary College Students

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Received 26 October 2014, www.cmnt.lv

## Abstract

A good habit of doing sports exercises can improve the physical fitness, and optimize body functions and prolong life. However, in the current society, few college students take exercise because of active consciousness and the physical fitness of overall students is not positive. Regular exercise in school is often arranged by school and it is not enough. Meanwhile the ways to stimulate students to exercise in consciousness are scanty. So the Cross-theory Model should be introduced in physical exercising behavior of contemporary college students and in this way the physical exercising behavior of the students can be gradually improved and their overall physical fitness can be improved.

*Keywords:* Cross-theory;Model; Exercise

## 1 Introduction

The full name of TTM is The Cross-theory Model, and it is “Kua Li Lun Mo Xing” in Chinese. TTM is a Research Method in Psychology with comprehensiveness and integration. This kind of research includes not only general discussion but also cognition of behavior change and theories in time and behavior aspect. It divides physical exercising behavior into five stages, i.e. the former intention stage, the intention stage, the preparation stage, the implementation stage and the maintenance stage. It changes the past static understanding of physical exercising behavior. The author combines TTM content system and summarizes and analyzes research status of the changes of physical exercising behavior of Contemporary College Students. In addition the author proposes the forecast to the changes.

## 2 The Definition and Content System of TTM

### 2.1 THE DEFINITION OF TTM

TTM has the behavior change with purposes and it focuses on changing the individual decision-making ability of aspects, not the influence of the society or biology. TTM composites many different theories and makes the theories systematic step by step on this basis, thus forms a way of studying the individual behavior change. In TTM each individual exists not as a single event but as a consecutive process when changing behavior. Before the behavior is really changed it always develops to the periodic change procedure of a series of circular dynamic changes. Behavior transformation strategy should be different in

allusion to the various individual in different stages. TTM not only expounds reasons of a certain behavior, and the more important thing is describing the process of changing a bad behavior and getting a positive one.

### 2.2 THE CONTENT SYSTEM OF TTM

According to the physical exercising behavior, TTM can be divided into four stages, which includes the Stage of Change, The Process of Change, Self –efficacy and Decisional Balance. (Figure 1)

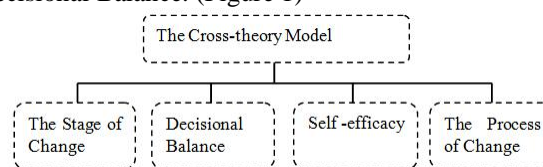


FIGURE 1 The construction of TTM

TTM points out a time series of behavior change and the series confirms the dynamic nature of behavior change and the motional developmental sequence to the direction of changes. The most important stage, the Stage of Change, describes the specific situation of the individual change, which involves ten cognitive and behavioral activities beneficial to the behavior change. Self –efficacy refers to the belief that one can successfully complete the necessary behavior and achieve the anticipated results. Decisional Balance involves positive and negative effects of the behavior or the perception of the interest and obstacles of the change.

## 3 The Result and Analysis

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### 3.1 ANALYSIS OF THE STAGES OF PHYSICAL EXERCISING BEHAVIOR OF STUDENTS

According to the five stages of physical exercising behavior, the proportion of each stage can be obtained after statistical processing. The survey shows that most of the 915 college students are in the former intention stage and the intention stage. It is directly shows that the focus of the intervention concentrates on these two stages. In the former intention stage the individual usually learn about health based on his cognitive level and then enters the intention stage and get knowledge about health further. Next the individual enters the preparation stage after getting the knowledge and behavior he need. This stage is very important and it is the key intervention object. Afterwards the individual takes part in the exercise and enters the implementation stage. And what makes the stage continuous is the maintenance stage. The last stage is a kind of long-term behavior and the specific effect should be judged by the length of the maintenance stage.

The result of the actual survey of physical exercising behavior of college teachers is similar to this survey. Most of the teachers are in the first two stages. But there is something different. For example, the status is not “The head is big and the tail is small” in Mongolia University. And the result is also influenced by major, aim and some other factors.

In this study we also learn that the gender difference also influences the stages of physical exercising behavior of college students. The differences are following several points. The number of boy students begins to decline from the former intention stage, while most girl students are in the intention stage. The number of boy students in the former intention stage is more than girl students. And the number of boy students in the maintenance stage is also more than girl students. Girl students are more than boy students in the preparation stage, the intention stage and the implementation stage.

TABLE 1 Changing stage statistics of college students’ physical exercising behavior

Gender/Stage	Girl student		Boy student		Headcount	
	n	%	n	%	n	%
The Former Intention Stage	125	13.7	150	16.4	275	30.1
The Intention Stage	131	14.3	119	13	250	27.3
The Preparation Stage	108	11.8	100	10.9	208	22.7
The Implementation Stage	74	8.1	68	7.4	142	15.5
The Maintenance Stage	15	1.6	25	2.7	40	4.4

### 3.2 DECISIONAL BALANCE AND THE SELF-EFFICACY ANALYSIS ON THE CHANGING STAGE OF STUDENTS’ PHYSICAL EXERCISING BEHAVIOR

From Figure 2 and Table 2 the situation of the decisional balance of the physical exercising behavior of students and the self-efficacy in different stages can be easily seen. The results of the self-efficacy of all the 915 college students in the survey are respectively 42.2, 53.5, 65.8, 68.4 and 72.3. For the obstacle of decision and the interest of decision, the numbers respectively are 51.8 and 44.4 in the former intention stage, 45.6 and 46.3 in the intention stage, 42.3 and 51.8 in the preparation stage, 43.1 and 55.7 in the implementation stage and 38.2 and 65.4 in the maintenance stage. The increasing trend in turn of the self-efficacy of physical exercising behavior of college students can shows that their confidence of taking part in physical exercise is strengthening. And the decline trend of obstacle of decision shows that the influence of the obstacle is becoming smaller.

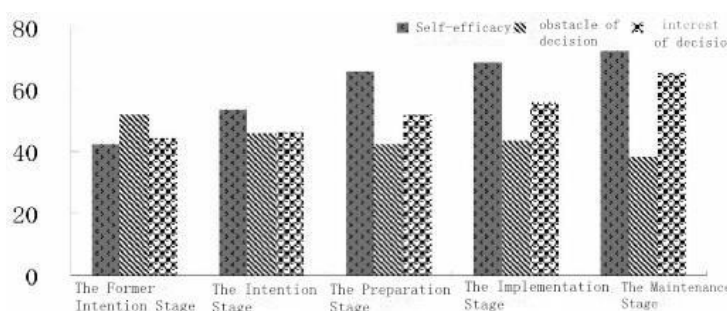


FIGURE 2. The mean distribution of decisional balance of the changes of physical exercising behavior of students and the self-efficacy in different stages

TABLE 2 Self-efficacy and decisional balance

Stage	gender	Self-efficacy	Decisional Balance		
			obstacle		interest
Former Intention	Male	41.2±4.4	55.6±6.5		71.7±4.3
	Female	43.2±4.5	64.3±4.9		89.4±7.3
Intention	Male	46.2±6.9	58.1±7.8		72.2±7.6
	Female	44.8±7.1	64.5±5.7		90.4±6.3
Preparation	Male	49.3±6.6	49.7±5.5		59.4±5.6

	Female	47.1±8.9		61.1±5.3		92.1±8.4
Implementation	Male	44.2±5.5		64.2±5.9		74.3±8.7
	Female	46.5±7.1		52.0±3.9		67.5±7.6
Maintenance	Male	57.3±6.5		44.1±5.7		68.5±7.1
	Female	53.2±5.9		51.3±5.6		75.1±5.4

### 3.3 ANALYSIS BETWEEN PHYSICAL EXERCISE BEHAVIOR CHANGING STAGE AND CHANGING PROCEDURE OF HIGH VOCATIONAL COLLEGE STUDENTS

Changing procedure of physical exercise includes following six interior influence factors: self-management, self-releasing, social releasing, mutual help relation, performance evaluation and consciousness controlling behavior; changing procedure of high vocational college students' physical exercise is also analyzed out through these six factors. Among these factors, two aspects of self-releasing and performance evaluation belong to internal factors in cognitive dimension; social releasing and mutual help relation are divided into external factors; self-management and consciousness controlling behavior are in the team of comprehensive dimension influence factors.

To the five changing stages mentioned above, the influences of changing procedure to each stage are different. And changing procedure is one of the major internal factor that affect changing stages of physical exercise, we can explain the changing of individual through the integration of changing stages and changing procedure, and the specific data is showed in table 3.

In the six factors above, two factors, self-releasing and consciousness control have strongest relevant degree with pre-intention stage, the relevant coefficients of stage and

factor are separately -0.23 and -0.10; self-releasing and self-management have strongest relevant degree with intention stage, the relevant coefficients of these two are separately 0.39 and 0.43; self-management and mutual relation have strongest relevant degree with preparatory stage, the relevant coefficients of these two are separately 0.42 and 0.46; the two important factors, self-releasing and social releasing have influence on action stage, the relevant coefficients of self-releasing and social releasing with action stage are separately 0.54 and 0.51; the two important factors, mutual relation and consciousness control have influence on maintaining stage, the relevant coefficients of mutual relation and consciousness control with maintaining stage are separately 0.54 and 0.51

Aiming at analysis on changing procedure of high vocational college students' physical exercise, we can conclude that there are different degrees of relevance between changing stage and changing procedure. Self-releasing has relative high relevance with the three in the front of other five factors; self-management has relative high relevance with the second and third stage, consciousness has relative high relevance with the first and last stage; mutual relation keeps rather high relevance with the first and the fifth stage, which directly indicates that different changing stages of physical exercise behavior are affected by different interior factors of changing procedure and the relative relevance among them are also different.

TABLE 3 Relevant parameter analysis between changing procedure and changing stages

Relevant coefficient	Pre-intention stage	Intention stage	preparatory stage	Action stage	Maintaining stage
self-releasing	-0.23**	0.39**	0.36**	0.54**	0.39**
self-management	-0.33**	0.22**	0.42**	0.34**	0.44**
consciousness control	-0.10**	0.43**	0.13**	0.42**	0.45**
mutual help relation	-0.27**	0.11**	0.46**	0.35**	0.51**
performance evaluation	-0.42**	0.35**	0.26**	0.43**	0.32**
social releasing	-0.53**	0.37**	0.32**	0.51**	0.28**

### 4. TTM's Prospect to the Changing of College Students' Physical Exercise Behavior

(1) When we have cognition to college students' physical exercise behavior, we can use changing stage theory and research the relevance between changing stage and changing procedure at the same time, introduce TTM in the research on the changing of college students' physical exercise behavior, and make specific intervening measures and methods inside so that it can make intervening strategy have characteristic and operability. The research on the changing of college students' physical exercise behavior based on TTM can have promoting effect to develop the habit of college students' physical exercise behavior in our country;

therefore, the favorable condition of this research prospect is undisputed.

(2) Research on strengthening intervening measures in stages based on TTM is only a relative typical measure representing intervening method, but in actual intervening process, specific operation is affected by individual and different environmental condition, intervening measures still need deeper research and improvement. How to make intervening measures getting further improvement and innovation needs to integrate specific sporting events, and be discussed and researched by related personnel and experimental intervening research, and then these problems can be solved in a better way.

(3) Applying diversification research methods to discuss

and observe the selection of index can make research method being strengthened, the range of research object be extended and have practical application research and cross-culture study, which is even more in favor of having deeper research and discussion on the changing mechanism of physical exercise behavior. Besides considering the conditions above, we shall also consider different variables of exercise behavior, such as persistent period, strength, type, exercise amount of each exercise, differences of time arrangement, etc. of exercise. These variables can affect the physiological and psychological effect produce by individual while exercise and also have influence on the later exercise intention and behavior of actor. At the same time, we also need to consider the variables of gender, age, professional, characteristic, different cultural background of individual exercisers, etc.

- (4) In the research of lengthways chase experiment before, tested physical exercise behavior researches are usually descriptively researched by researcher. In the specific experimental research, we haven't have deep discussion on the problem of college students' exercise behavior and haven't summarized how to integrate specific sports events to formulate complete system,

which is fit for the intervening strategy of exercise behavior. So the future research shall put emphasis on long-term tested observed research and have summary and conclusion on tested behavior exercise feature in different stages.

- (5) The aspect of practical application integrates the promotion of college students' physical exercise behavior changing with the physical quality of college students, so as to increase the physical performance standard of them, at the same time, have relevant discussion and research on physical test performance and changing of physical exercise behavior.

## 5 Conclusion

In conclusion, the application of TTM in college students' physical exercise behavior at the present times, its changing procedure and changing stage are mutual relevant and affect each other, and the application of TTM can effectively promote students to form favorable exercise habit, improve physical quality, but the current research on it is still not deep and requires further discussion and research.

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