Original Article

Evaluation of the Relationship between Causality Orientation and Decisional Balance at Different Stages of Exercise Behavior Change

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Abstract

The study aims to evaluate the relation between the decisional balance and causality orientation of exercise. Stage of Exercise Behavior Change scale (Cardianl, 1997), Decisional Balance questionnaire (Plotnikoff et al, 2001) and Causality Orientation of Exercise questionnaire (Rose, Markland & Parfitt, 2001) was used. The multivariate discriminant analysis was used to predict the stages of behavior change based on decisional balance and causality orientation. The results showed that there is a significant and positive relation between the perceived advantages of exercise and control and autonomy orientations. Decisional balance and aspects of causality orientation of exercise makes a powerful predicative model to predict the membership of participants in various stages of behavior change. This means that it is necessary to consider the role of exercise motivation in various stages of exercise behavior and its relation with components of transtheoretical model to make a powerful predictive model.

Key Words: Autonomy Orientation, Control Orientation, Transtheoretical Model, Causality Orientation Theory

Introduction

In the current situation, the number of people participating in training sessions is low. It seems that it's difficult for people to participate in these trainings for over 6 months. Haase, Steptoe, Sallis, and Wardle (2004) did an extensive survey among the students of 23 countries all around the world. They reported that physical activity rate (in free time) was lower than the suggested values in many students. Therefore, it is important for researchers and trainers to understand why young people engage - or do not engage- in such health promoting behaviors as exercise. Such theoretical models as the theory of reasoned action (Fishbein & Ajzen, 1975), theory of planned behavior (Ajzen, 1985), Health Belief Model (Strecher & Rozen tak, 1997), Transtheoretical Model (Prochaska & DiClemente, 1983) etc. have studied the exercise behavior and its effective factors (Taylor et al., 2006). Transtheoretical Model has been considered more than the other models (Marcus & Simkin, 1994) because it is applied successfully to explain a range of health behaviors like physical activity (Spencer, Adams, Malone, Roy, & Yost, 2006). The Transtheoretical model includes five stages of exercise behavior change, ten processes of exercise behavior changes, decisional balance, and self-efficacy. Five stages of behavior change include the precontemplation stage (participants are not active physically and they have no intention to be active in the next six months), contemplation (participants are not active physically but they have intention to become active in the next six months), preparation stage (the person is intended to change his/her behavior in the next 30 days and has taken some behavioral steps in this direction), action (participants are training regularly for less than six months), and consistency (the participants have retained the regular training for more than six months) (Lenio, 2005). Change process that is second main aspect of transtheoretical model describes how these changes occur (Prochaska, DiClemente, & Norcross, 1992). Ten processes have been perceived in most theoretical and empirical supports in the hidden (cognitive) and evident activities (behavioral) which were used for advancement in the stages (Prochaska & Velicer, 1997; Rodgers, Courneya, & Bayduza, 2001).

The stages of behavior change are useful when the changes occur in the cognition, emotion, and behavior but the change processes are helpful to explain the way these changes occur (Lenio, 2005). Balance in decision-making reflects the relative weight of participants in understanding of positive and negative aspects of behavior change. The positive aspects of behavior change usually increase during the stages of behavior change and often culminate in the action stage. Conversely, the negative aspects usually decrease by advancements in change stages (Prochaska, Redding, & Evers, 1997). The positive and negative aspects of behavior should pass each other and the positive aspects pass the negative ones before the participant progresses to action stage (Reed, Velicer, Prochaska, Rossi, & Marcus, 1997). Although the transtheoretical model is recognized as a powerful model for behavior change, some limitations about the use of this model for physical activity are reported (Farmanbar, Niknami, Lubans, & Hidarnia, 2011). For example, Adams and White (2003) stated that physical activity is not a single behavior and the participants may understand differently the model components. It is also suggested that there are some determinants of physical activity which do not come to account by transtheoretical model (Adams & White, 2003). Finally, the transtheoretical model is a descriptive one which is not predictive and does not explain why people have or do not have physical activity. Also, it does not recognize the effects

that are the base of adopting and maintaining of physical activity (Biddle & Nigg, 2000). In addition, some studies have shown that the effective self-regulation of practice is a function of independent and regulatory incentive of practice (Fortier, Sweet, O'Sullivan, & Williams, 2007); The variable which has not been considered in the transtheoretical model, or at least it was a quantitative approach and not qualitative. The evidence also show that the motivation is an important determinant factor of training behavior for population of healthy people and individuals with chronic diseases (Biddle & Nigg, 2000; R.C. Plotnikoff, Brez, & Hotz, 2000). Physical activity has a complex nature. So the changes in training behavior cannot be studied just based on a single theoretical approach (Pintrich, 2003). Combining different theoretical models will help to understand this complex nature and leads to achieve more powerful predictors in order to participate regularly in exercise and physical activity. The framework that has recently been used to study the variability of participation in physical activity and exercise experience is self-determination theory (Deci & Ryan, 1985; Ryan, 1995; Ryan & Deci, 2000). The self-determination theory is attractive because it specifies different reasons for behavioral occupations and consequences related to adopting or approving different motives in various areas (E. L. Deci & Ryan, 1985). This theory chooses one multi-aspect approach to answer why some people participate in the positive and adaptive health behaviors while others do not. It also evaluates the extent to which the motivation of participants is self-determining or being controlled. Reasoned orientation theory is one of the main sub-theories of self-determination theory which suggests that the solution is interpreted differently from one participant to another in a specific situation. While, one specific situation is an informational situation for one participant, it can be a controlling situation for the other. Deci and Ryan (1985) Describe three types of causality orientation: Autonomy, Control and Impersonal. The base of autonomy orientation is the experience of selection.

The participants look for information to regulate their selected behavior. They try to be self-determining and follow the opportunities to achieve them. Control direction is shaped through searching for control and pressure imposed by ourselves (like sin) or by the environment (possibility of reward). Here, self-determining sense is missing. Finally, Impersonal direction is based on participant's sense that there is no affiliation between the behavior and behavioral outcomes. They feel that they are not able to regulate their behavior in order to achieve their favorite outcomes. In this case, the non-motivational aspect is more clear and prominent (Rose, Parfitt, & Williams, 2005). Theoretically, high level of autonomy direction is the most useful element to keep exercise behavior, because it supports self-determination and promotes intrinsic motivation. The high level of control direction may be harmful for long participation of participants in the training because it steadily undermines self-determining and does not promote intrinsic motivation (unless the people can look for the control and pressure that is needed to keep their motivation) (Rose et al, 2005). There is one way to integrate the theory of causality orientation and the models of change stages, that is, their distinctive similarity in achieving behavioral regulation over time. One of them emphasizes the behavioral and cognitive changes of exercise (the transtheoretical model) and the other one emphasizes the effects of social areas on exercise motivation (causality orientation). Although addressing these issues separately is useful, it has shortcomings. One of the main shortcomings is that the understanding of people's behavioral regulations over time does not occur completely without studying the training motives based on the decisional balance and cognitive processes. Previous studies have examined the relation of some of theoretical aspects of self-determination with stages of exercise behavior change (Daley & Duda, 2006; Ingledew, Markland, & Sheppard, 2004; Landry & Solmon, 2004; Mullan, Markland, & Ingledew, 1997; Thøgersen-Ntoumani & Ntoumanis, 2006). Rose et al (2005) have shown that the value of independence orientation has increased during the stages in male and female. Conversely, the value of control orientation remains constant; and the independence orientation and extrinsic regulation of self-determination were related more with the last stages of behavior change. The research results of Farmanbar et al. (2011) showed that there was statistically significant relationship between the exercise behavior and all structures of transtheoretical model and self-determination theory. The modified model provided a good fit to the data and explained 82 percent of the variance of current training behavior. The longitudinal research of Fortier et al. (2007) also showed that self-determination motive increases in the participants who exercise regularly for six months. Daley and Duda (2006) also showed the men and women had lower self-determination in the first stages of behavior change than the participants in higher stages in the regulation of their behavior training. Moreover, the men and women who had more self-determination reported more physical activity during three last months. Although there is a relationship between transtheoretical model and self-determination theory, more researches are needed to determine the contribution of these two theories' structures in a single model to explain the training behavior.

The researchers conducted up to now have merely relied on the study of relationship between the stages of training behavior change (related to transtheoretical model) and various motivational aspects of self-determination (such as intrinsic motive, extrinsic motive, and demotivational) as well as various aspects of causality orientation theory. They did not consider the relation between other structures of transtheoretical model (such as decisional balance and the processes of behavior change) with the aspects of self-determination theory. As it was mentioned above, several researches have shown that participants are more self-determining in the high stages of behavior change. There is a question whether the decisional balance can be related to the control values of participants (Autonomy, control, Impersonal) or not. What is the strength of these relations? Is the

integration of decisional balance structure and aspects of causality orientation theory a significant predictor in the stages of behavior change? If so, is the power of this prediction higher than any of the variables of balance in decision-making and reasoned orientation of exercise? To review these questions, more careful studies are required. Such studies lead to recognize the variables from the other theoretical frameworks which are involved in the progress of stages and researchers develop more appropriate interventions to meet the needs of participants.

Material & methods

Participant

The present research is a field study with descriptive and correlation nature. 230 students (120 male and 110 female) were selected by multistage cluster among students of Damghan University.

Procedure

The Cardinal scale (1997) of stages of exercise behavior change was used to evaluate the stages of exercise behavior change (Cardinal, 1997). This 5-optioned scale evaluates the changes of exercise behavior of participants in five stages of precontemplation, contemplation, preparation, action, and consistency. The test-retest coefficient of the scale was 0.82 in this study. The questionnaire designed by R. C. Plotnikoff, Hotz, Birkett, and Courneya (2001) was used to evaluate the decisional balance. The questionnaire included 10 questions which first five questions specify perceived advantages of exercise (pros) and second five questions specified perceived disadvantages of exercise (cons). This instrument examines the importance of advantages and disadvantages of exercise (pros and cons) and respondents show the importance of their idea based on the scale of Likert five degrees from extremely important that equals 5 and unimportant that equals 1. This questionnaire has been used in many studies and the coefficient of test-retest has been reported within two weeks with value of 0.91 for perceived pros and 0.89 for perceived cons by Kim (2004). The Cronbach's alpha coefficient was 0.812 for perceived pros, 0.846 for perceived cons, and 0.831 for total scale. Since the original version of the questionnaire (English version) is used for this questionnaire (and the questionnaire of causality orientation of exercise (Rose, Markland, & Parfitt, 2001)), Banville's method was used for translation process and validation tool for English to Persian (Banville, Desrosiers, & Genet-Volet, 2000). The cultural relevance and psychometric properties have been emphasized in this method.

The questionnaire of causality orientation is a scale with seven values Likert rating and a set of conditions (Rose et al., 2001). Each condition helps to get instances which motivate the participant to be active physically and keep physical activity. Each question includes three related responses with three basic psychological needs (it was said in self-determinant theory). This scale contains seven scenarios to specify the provisions related to exercise incentives. Rose et al (2001) developed the scale of exercise causality orientation and confirmed the factorial validity, convergent validity and reliability. The scale measures the power of each of the three orientations in the exercise setting. The relations between the orientations and behavior modifications for exercise confirm the validity of the scale. Their study showed that self-determinant behavior modifications were related to self-determinant orientation positively and they were related to impersonal orientation negatively.

External modification showed positive relation with both control and impersonal orientations. Therefore, the grounds to get the importance of information and control about exercise were related to the behavior modifications for motives of participation in exercise. The reliability of causality orientation scale of exercise was obtained using Cronbach's alpha for autonomy, control, and impersonal aspects as 0.85, 0.798, 0.833 respectively and for the whole questionnaire as 0.825.

Data collection and analysis

To analyze the data, descriptive statistics was used to describe statistical data (such as mean, standard deviation) and inferential statistics was used to evaluate research hypothesis. Multivariate variance was used to compare the causality orientation of participants in various stages of behavior change and Pearson correlation coefficient was used to evaluate the relation between the decisional balance and various aspects of causality orientation of exercise. Finally, the multivariate discriminant function analysis was used to predict the stages of behavior change based on decisional balance and causality orientation.

Result

According to research findings, 76 percent of sample participants participated in three first stages of behavior change (first stage: 15 percent, second stage: 32 percent, third stage: 29 percent). Table 1 shows the mean and standard deviation of variables in various stages of exercise behavior change. As it is seen, the perceived pros and cons have higher average in the consistency stage than the other stages, specifically in first stage that is precontemplation.

Table 1 Mean and standard deviation of variables in various stages of exercise behavior change

Impersonal orientation	Control orientation	Autonomy orientation	cons	pros	Variable
M $\pm$ SD	M $\pm$ SD	M $\pm$ SD	M $\pm$ SD	M $\pm$ SD	
4.55 $\pm$ 0.93	4.24 $\pm$ 0.77	4.40 $\pm$ 1.2	2.83 $\pm$ 0.91	3.53 $\pm$ 0.88	precontemplation
4.53 $\pm$ 0.8	4.54 $\pm$ 0.8	4.78 $\pm$ 0.87	2.7 $\pm$ 0.75	3.75 $\pm$ 0.76	contemplation
4.56 $\pm$ 0.85	4.45 $\pm$ 0.92	5.01 $\pm$ 0.88	2.63 $\pm$ 0.72	3.87 $\pm$ 0.77	preparation
4.01 $\pm$ 0.63	4.38 $\pm$ 0.78	4.83 $\pm$ 0.82	2.28 $\pm$ 0.53	3.98 $\pm$ 0.82	action
3.92 $\pm$ 0.73	4.64 $\pm$ 0.81	4.93 $\pm$ 0.78	1.95 $\pm$ 0.68	4.25 $\pm$ 0.47	consistency

Table 2 shows the correlation between dependent variables. The results of Pearson test shows that there is a positive significant relation between perceived pros and control and autonomy orientations. There is also a positive significant relation between cons and autonomy orientation.

Table 2 Correlation between dependent variables

Impersonal orientation	Control orientation	Autonomy orientation	cons	pros	variable
0.105 0.128	0.248 0.001	0.237 0.001	- 0.083 0.228	1	pros
- 0.005 0.938	0.077 0.261	0.148 0.031	1		cons
0.341 0.001	0.45 0.001	1			Autonomy orientation
0.543 0.001	1				Control orientation
1					Impersonal orientation

The interesting results obtained after evaluating the relation between decisional balance and causality orientations of exercise in various stages of behavior change. The results of Pearson correlation coefficient for each of the stages showed that there was no significant correlation between perceived pros and cons in first stage (precontemplation), fourth stage (action), and fifth stage (consistency) and none of causality orientation aspects (autonomy, control, impersonal) ($p>0.05$). On the other hand, there was a positive and significant relation between the perceived cons and autonomy ($r=0.409$, $p=0.001$) and control orientations ($r=0.357$, $p=0.003$). There was also in this stage a positive and significant relation between cons and autonomy orientation ($r=0.148$, $p=0.031$). There was also a positive and significant relation between perceived pros and control ($r=0.256$, $p=0.048$) and autonomy orientations ($r=0.344$, $p=0.006$) in preparation stage.

Table 3 shows the results of MANOVA test to evaluate the variables (pros and cons, causality orientations of autonomy, control, and impersonal) in various stages of behavior change. The pre-hypotheses were investigated before doing the test. The results (M Box test) showed that there was a similar matrix of variance-covariance for compared different samples ($p>0.05$). The correlation between dependent variables was average. The results of Mahalanobis Distance Criterion showed that the dependent variables do not have multivariate outlier.

Table 3 One-way MANOVA test for comparison dependent variables in stages of exercise behavior change

Eta	sig	df	F	Wilks Lambda	Statistic
0.043	0.015	4	1.829	0.84	Effect
					Stages of exercise behavior change

One-way variance was used to compare each of the dependent variables in various stages of behavior change because the main effect of group was significant for optimal linear combination of dependent variables. Table 4 shows the output of one-way variance analysis. As table 4 shows, there is a significant difference between different stages of behavior change in variables of perceived pros, cons, autonomy orientation, and impersonal orientation. The results of Bonferroni post hoc test showed that there was a significant difference between first stage (precontemplation) and fourth and fifth stages (action and consistency) in the variable of perceived pros. There was also a significant difference between the first and second stages with fifth stage in the variable of cons. The results of Bonferroni test showed that there was a significant difference between first stage (precontemplation), third stage (preparation), and fifth stage (consistency) in the variable of autonomy orientation. Finally, there was a significant difference between three first stages (precontemplation, contemplation, and preparation) and two last stages (action and consistency) in the variable of impersonal orientation.

Table 4 One-way ANOVA test for comparison each dependent variables in stages of behavior change

Eta	sig	F	df	Sum of Squares	Statistic Variable
0.061	0.011	3.364	4	7.882	pros
0.057	0.015	3.163	4	6.967	cons
0.044	0.049	2.422	4	8.181	Autonomy orientation
0.027	0.219	1.450	4	4.064	Control orientation
0.048	0.033	2.614	4	1.622	Impersonal orientation

Results from the discriminant function analysis of the Decisional Balanced subscales (pros and cons) showed that one function was significant (canonical $r=0.265$; Wilks' $L=0.884$, $df=8$, $P=0.001$) and accounted for 59.3% of the variance. The structure correlations indicated that higher levels of the perceived pros (0.731) and cons (0.61) defined the function. The function correctly classified 25.4% of cases.

Results from the discriminant function analysis of the Causality Orientation subscales (Autonomy, Control, Impersonal) showed that one function was significant (canonical $r=0.212$; Wilks' $L=0.929$, $df=12$, $P=0.225$) and accounted for 62.8% of the variance. The structure correlations indicated that higher levels of the autonomy orientation (0.99) and lower levels of control orientation (0.331) and Impersonal orientation (0.334) defined the function. The function correctly classified 25.8% of cases.

Results from the discriminant function analysis of the both Causality Orientation (Autonomy, Control, Impersonal) and Decisional Balance (pros and cons) showed that one function was significant (canonical $r=0.288$; Wilks' $L=0.840$, $df=20$, $P=0.015$) and accounted for 50.1% of the variance. The structure correlations indicated that higher levels of the perceived pros (0.665) and autonomy orientation (0.626) and lower levels of control orientation (0.438), cons (0.546) and Impersonal orientation (0.318) defined the function. The function correctly classified 29.8% of cases.

Discussion

The purpose of this research is to evaluate the relation between the decisional balance (one of the main aspects of transtheoretical model of behavior change) and causality orientation of exercise (the important sub-theory of exercise self-determinant theory) to achieve a powerful predictor model of exercise behavior change. The results showed that there is a significant and positive relation between perceived pros and control and autonomy orientations. The results also showed that there is a significant and positive relation between cons and autonomy orientation. The causality orientation theory (E. L. Deci & Ryan, 1985) was drafted to describe the individual differences in participants' tendency to connect with social environment in a way that support their independence, control their behavior, or discourage them (Summers-Karn, 2008). This theory hypothesizes that the participants' motivation, behavior, and experience is a function of both social context and interpersonal resources factors in a special situation that is developed as a function of past interactions with social context over time (E. Deci & Ryan, 2002). According to this theory, the ways people regulate their behavior are different. So, the relation between perceived pros and cons is debatable with the aspects of exercise causality orientation. Perceived pros and perceived cons is affected by three factors of task (exercise nature, exercise intensity, and exercise duration), the individual (personality features, physical and motor fitness), and environment that includes the individual social environment (the opportunity to connect with others, merit expression, shame) by each participant. For example Karaca et al (2016) showed that the perceived pros in women and more active people are higher than other individuals. Therefore, based on self-determinant theory, the individuals training motives originated from three psychological needs to gain independency, communication with others, and expression of merit (Ryan & Deci, 2000), can be relevant with the perceived pros and cons. The results of this research also showed that the high values of perceived pros are related to high values of autonomy and control orientations. In the autonomy orientation, participants understand their behaviors as self-selected, self-initiated, and self-regulated behavior. These participants look for the opportunities related to their individual values and interests. So, the participants with high independent orientation look for cons of these values choice in order to look for personal values and have the right to choose freely. On the other hand, if we consider the achievement to independence and freely choice as one of the good advantages of training, it can be concluded that the participants with autonomy orientation are more self-determinant because they have understood well the good advantage of training. For the communication nature of results, any causality interpretation about the results and their orientation should be done cautiously. This issue needs to experimental research, cannot conclude high levels of independent orientation leads to increased perceived pros or high levels of perceived pros will lead to more self-determinant to individual. In general, it is likely that when a person starts to give value for benefits and consequences of exercise and considers exercise as an important aspect, he/she is described as someone who has been moderated by diagnosed concepts of exercise. Diagnosed adjustment is detected by high levels of self-determinant Rose et al. (2005) On the other hand, the participants with control orientation understand their behavior as a behavior that is affected by forces and external demands or internal necessities. Although these external forces or internal necessities decrease the self-determinant to some extent, they lead to more evaluation of training and its components and more perception of training advantages. Various studies have shown that

perceived pros decrease in the first stages of behavior change and increase in the last stages of behavior change (action and consistency) (Buckworth & Wallace, 2002; Lee, Park, & Kim, 2006; Marshal & Biddle, 2001). The studies related to aspects of self-determinant theory and stages of exercise behavior change have shown that the participants in the high stages of exercise behavior change have more autonomy orientation and less control and impersonal orientations (Daley & Duda, 2006; Landry & Solmon, 2004; Rose et al., 2005). In general, they are self-determinant. It is likely that by increasing perceived pros during the stages of behavior change in the participants with control orientation, the internal necessity or external pressure is gradually becoming an attachment and leading to increase self-determinant. The results also showed that the high values of cons are related to high values of independent orientation. Although some researches (Bock et al., 1997; Deng, Tsuda, Horiuchi, & Matsuda, 2013; Marcus & Simkin, 1994; Wallace & Buckworth, 2001) did not find significant difference in the variable of perceived pros among various stages of behavior change, there was significance difference in both variables of perceived pros and cons in some researches among various stages of behavior change. This is indicative of the importance of cons. Most of the participants have high perceived advantages of exercise but because their perceived disadvantages are also high, they do not have balance in right decision-making to choose physical activity. The results showed that more self-determinant participants (high autonomy orientation) besides having high perceived advantages have higher perceived disadvantages of exercise; although the correlation between cons and autonomy orientation was lower than perceived pros. The results also showed that the right understanding of exercise conditions (positive or negative) is necessary to lead participants to more self-determinant. The results stated that there was no significant relation between cons and control orientation. It is likely that in spite of perceived pros which as an internal necessity can play the control role for the exercise behavior of participants, cons lacks this role. In fact, although cons are related to more perception of exercise condition with high autonomy orientation, it does not have relation with control and impersonal orientations. One of the interesting results of the study, achieved after evaluation of the relation between the variables in separate stages of behavior change, was that the relation between perceived pros and cons and causality orientation aspects in the second (contemplation) and third (precontemplation) stages were significant. In fact, the participants do not practice in the first stage and do not have intention to practice, too. They do not follow the perceived advantages and disadvantages of exercise due to lack of having the conditions of "behavior choice" and "behavior regulation"; the relation between these perceptions and levels of autonomy orientation is to some extent meaningless because there is no choice. The participants probably need to have the other factors except perceived pros and cons to increase their self-determinant levels in the action and consistency stages because they passed from "choice" stage and practice the exercise and chosen activities. But participants in the second stage (who do not exercise and have intention to exercise) and preparation stage (who exercise irregularly) are affected by perceived pros and perceived cons because of being at a special stage. These perceptions can be related to level of self-determinant because of their effect on "informed choice".

The results of the study also showed that there is a significant difference between various stages of behavior change of exercise in the variables of perceived pros, perceived cons, autonomy orientation, and impersonal orientation. Participants had more perceived advantages of exercise and less perceived disadvantages of exercise in the higher stages of behavior change. The results about two variables of perceived pros and perceived cons were in line with studies such as (Buckworth and Wallace (2002); Lee et al (2006); Marshal and Biddle (2001)). In the autonomy orientation variable, the participants had more self-determinant (high levels of autonomy orientation) in the higher stages of behavior change (preparation and consistency) than first stage (precontemplation). These results were in line with Daley and Duda (2006), Fortier et al. (2011) and Rose et al. (2005). There was also a significant difference impersonal orientation between three first stages of behavior change and the stages of action and consistency, but there was no significant difference in the control orientation between the stages. This means that the participants had a similar level of control orientation in various stages of behavior change. This result was consistent with Rose et al. (2005). The high level of autonomy orientation and low level of impersonal orientation distinguished the participants who exercise regularly from those who did not exercise or did not have intention to do. So, to support the choice of participants and to provide this belief that results gain by training, it makes participants motivated to achieve higher stages of change (Rose et al., 2005). According to cognitive evaluation theory (sub-theory of self-determinant theory), interpreting a situation as an information or control situation, can affect the internal motivation of the participant. If the situation interprets as information situation, the internal motivation will increase because of increased perceived merit; and if it interprets as a control situation, it will decrease the internal motivation because of the sense of control (Weinberg & Gould, 2007). Rose et al. (2005) Believe that the features of objective situation do not affect self-determinant, perceived merit, and internal motivation, but the individual perceptions of the strength of three aspects are important. It has been argued that there is a center in orientations of each person that provides the field for search of information, control, and impersonal orientations by participants of each situation to regulate the behavior. This interpretation is interacting with the real context and situational features that leads to final interpretation. External forces and demand were similar for most participants because the students were in an organized and similar exercise environment and had the same sports equipment. Therefore, the participants feel similar control from social environment in all stages of behavior change.

Finally, the results showed that the decisional balance and aspects of causality orientation of exercise makes a powerful predicative model to predict the membership of participants in various stages of behavior change (29.8 percent for combining model, 25.4 for balance in decision-making, and 25.8 for causality orientation). This means that it is necessary to consider the role of exercise motivation in various stages of exercise behavior and its relation with components of transtheoretical model to make a powerful predictive model. Based on the results of the study, it is suggested that the advantages and disadvantages of training should be explained exactly and completely and to provide the situation in a way that the participants perceive more advantages of exercise than the disadvantages. The autonomy orientation with more perceived advantages and disadvantages and much better perception of participants in the training condition lead to the development of the level of participants' self-determinant. It is also suggested that the exercise sessions run with emphasis on more self-determination of participants in order to develop the perceived advantages of training and stages of behavior change of exercise. It is better for participants to have information intention from the advices of coaches not control intention. In general, the results of this research suggest the usefulness of combining the two theories and mention the benefits of this integration in the more precise planning of training and physical activity for participants in order to develop the stage of their behavior change.

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