“Theory of Planned Behavior” in Physical Therapy: From Deciding Exercise Prescription to Improving Exercise Adherence

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1. Introduction:

The Theory of planned behavior (TPB) was proposed by Icek Ajzen in 1988 which was an expectancy-value theory that provided a framework for the study of behavioral and normative beliefs affecting health behaviors. The theory of planned behavior (TPB) is a popular framework for understanding the informational and motivational influences of exercise and physical activity behavior, and it can explain the patterns of health behavior change which when addressed would facilitate better and adequate healthcare delivery at individual, institutional and community-based settings.

The readers are referred elsewhere for an excellent detailed description on TPB.

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“1.1. Behavioral beliefs and attitude toward behavior

1.1.1. Behavioral belief: an individual's belief about consequences of particular behavior. The concept is based on the subjective probability that the behavior will produce a given outcome.

1.1.2. Attitude toward behavior: an individual's positive or negative evaluation of self-performance of the particular behavior. The concept is the degree to which performance of the behavior is positively or negatively valued. It is determined by the total set of accessible behavioral beliefs linking the behavior to various outcomes and other attributes.

1.2. Normative beliefs and subjective norms

1.2.1. Normative belief: an individual's perception about the particular behavior, which is influenced by the judgment of significant others (e.g., parents, spouse, friends, teachers). 1.2.2. Subjective norm: an individual's perception of social normative pressures, or relevant others' beliefs that he or she should or should not perform such behavior.

1.3. Control beliefs and perceived behavioral control

1.3.1. Perceived behavioral control: an individual's perceived ease or difficulty of performing the particular behavior. It is assumed that perceived behavioral control is determined by the total set of accessible control beliefs.

ABSTRACT

The objective of this editorial was to provide an evidence-informed update and overview on the Theory of planned behavior with its population-specific application for evaluating, planning and implementing physical therapy assessment and treatment of exercise and physical activity.

Key words: physical activity, behavioral models, biopsychosocial rehabilitation.

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1.3.2. Control beliefs: an individual's beliefs about the presence of factors that may facilitate or impede performance of the behavior. The concept of perceived behavioral control is conceptually related to self-efficacy.

1.4. Behavioral intention and behavior

1.4.1. Behavioral intention: an indication of an individual's readiness to perform a given behavior. It is assumed to be an immediate antecedent of behavior. It is based on attitude toward the behavior, subjective norm, and perceived behavioral control, with each predictor weighted for its importance in relation to the behavior and population of interest.

1.4.2. Behavior: an individual's observable response in a given situation with respect to a given target. Ajzen said a behavior is a function of compatible intentions and perceptions of behavioral control in that perceived behavioral control is expected to moderate the effect of intention on behavior, such that a favorable intention produces the behavior only when perceived behavioral control is strong."

The objective of this editorial was to provide an evidence-informed update and overview on the Theory of planned behavior with its population-specific application for evaluating, planning and implementing physical therapy assessment and treatment of exercise and physical activity.
2. Population-specific application of ‘Theory of planned behavior’ in assessment and treatment of exercise and physical activity:

The therapist would be able to predict exercise intentions\(^5\) and readiness for regular physical activity\(^6\) using TPB.

2.1. Age:

2.1.1. Physical activity and exercise in children:

Attitude, subjective norm, and perceived behavioral control accounted for 45% of the variance in intention with most children having positive attitudes, moderately strong intentions, felt in control, and perceived support from significant others (i.e., physical education teachers) for their physical activity engagement.\(^7\)

2.1.2. Physical activity and exercise in adolescents:

The standard TPB variables—past behavior, self-identity, and group norms, but not social support influenced and predicted intentions, and intention, past behavior, and self-identity predicted behavior in adolescents.\(^8\)

TPB explained 47% of the variability in the measure of physical activity intention in school students. The predictor variables of attitude, subjective norm, and perceived behavioral control were specifically influences across grade and grade-by-gender subgroups.\(^9\)

2.1.3. Physical activity and exercise in young adults:

Attitudes predicted intentions and whereas the effect of the subjective norms on intention was significant and the effect of PBC on intentions was not significant in the Hungarian sample.\(^10\)

Lee\(^11\) found that descriptive norm did not augment the theory of planned behavior, all original constructs—attitude, injunctive norm (a narrow definition of subjective norm), and perceived behavioral control—statistically significantly predicted leisure-time physical activity intention in Korean Americans’ exercise behavior.

2.1.4. Physical activity and exercise in adults:

Armitage\(^12\) studied 94 people in a gymnasium and found that ‘(a) perceived behavioral control was significantly predictive of intentions and actual behavior, (b) stable exercise habits developed in the first 5 weeks of the study, and (c) successful prior performance enhanced perceptions of behavioral control.’

Blue-collar workers’ attitude toward exercise and perceived behavioral control explained 61.7% of the variance of intention, whereas intention and perceived behavioral control explained 51.3% of the variance of exercise behavior.\(^13\)

Perceived Behavioral Control defined one’s ultimate Exercise Behavior over a 5-month period while scores on Fitness Attitude defined Intentions to Exercise in adults.\(^14\)

2.1.5. Physical activity and exercise in older individuals:

TPB plus functional ability explained an additional 11% variance than the TPB alone in older adult PA.\(^15\)

Attitude, social norm, and perceived behavioral control, was strongly associated with intent to exercise in older Americans.\(^16\)

2.2. Personal-professional:

2.2.1. Physical activity and exercise of parents:

Hamilton et al\(^17\) found that self-determined motivation indirectly influenced intention via the TPB variables (i.e., attitude, subjective norm, and perceived behavioral control) and intention indirectly influenced behavior via planning for parental physical activity.

2.2.2. Physical activity and exercise of teachers:

Kirk and Rhodes\(^18\) identified specific behavioral and control correlates about PA enjoyment, limited time, inconsistent schedule, work demands, and job pressures to distinguish between those who remained active from those who did not across the transition.

2.2.3. Physical activity and exercise in students:

TPB offered a good prediction of physical activity intentions but falls short of predicting behavior in first-year university students.\(^19\)

Intention was the lone significant predictor of PA for Caucasian students, whereas perceived behavioral control was the significant predictor of
PA for African American students. Affective attitude, subjective norm, and perceived behavioral control (PBC) were significant predictors of intention for both ethnic (black and white) groups, whereas the PBC-intention relationship was significantly stronger for white students.

Tsorbatzoudis evaluated a school-based physical activity intervention programme comprised of 12-week lectures and posters for students and found that the intervention was effective in improving attitudes towards physical activity, perceived behavioral control, intention, and self-reported actual behavior, but it was ineffective for improving attitude strength, subjective norms, and role identity compared to a control group.

Kerner developed the scales assessing Attitude to Leisure-time Physical Activity, Expectations of Others, Perceived Control, and Intention to Engage in Leisure-time Physical Activity in middle-school students based upon TPB. Perceived control added to the contributions of attitude to leisure-time physical activity and subjective norm in accounting for 50.7% of the total variance of intention to engage in leisure-time physical activity. 10% of the variance of leisure-time physical activity was explicated by intention to engage in leisure-time physical activity and perceived control, with perceived control contributing 6.4% among high-school girls.

Ethnicity and gender were interacted by moderating the relationships between exercise intention and effective and instrumental attitudes.

TPB variables, extroversion, and perceived health collectively accounted for substantial variance in aerobic (19%) and resistance exercise (40%) in college students.

2.3. Gender:

2.3.1. Physical activity and exercise in women:

Attitude towards physical activity, and perceived behavior control for physical activity were statistically and clinically significant predictors of physical activity among the middle-aged African American women. Activity behavior attenuated theory construct influence on intention, and perceived behavioral control was the strongest predictor of intent to engage in physical activity among low-income Mexican-American women.

Exercise behavior was predicted by perceived control beliefs and behavioral beliefs; and exercise intentions were predicted by perceived control beliefs, behavioral beliefs, and normative beliefs in older women.

2.3.1.1. Physical activity and exercise in pregnancy:

Intention and not perceived behavioral control significantly predicted exercise behavior, and attitude was the strongest determinant of exercise intention, followed by perceived behavioral control, and subjective norm in pregnant women in their second and third trimester.

2.3.1.2. Physical activity and exercise in post-partum women:

Normative beliefs, perceived behavioral control, and behavioral beliefs followed a single-factor model whereas attitude and control beliefs were found to be multidimensional.

2.3.1.3. Physical activity and exercise in post-menopausal women:

TPB model explained 44% of the variance in PA intentions with instrumental attitude, affective attitude, descriptive norm, and self-efficacy making significant contributions to PA intentions in post-menopausal women.

2.4. Non-communicable disorders:

2.4.1. Physical activity and exercise in obese individuals:

Attitude was the strongest predictor of PA intention, whereas PBC was the strongest predictor for PA behavior, and Intention was not predictive of PA behavior in overweight and obese individuals.

Perceived Behavioral Control emerged as the single-best predictor of both exercise intentions and self-reported behavior, and both subjective norms and attitudes toward exercise played a larger role in the prediction of intention and behavior in bariatric surgery patients.

Gardner and Hausenblas found that ‘(1) the direct measure of perceived behavioral control (PBC) predicted exercise intention, (2) the direct measures of instrumental
attitude, subjective norm, and PBC predicted diet intention, and (3) none of the direct or belief-based measures of the TPB constructs predicted 4-week exercise or diet behavior in overweight women.

2.4.2. Physical activity and exercise in diabetic adults:
TPB explained 10% and 8% of the variance respectively for aerobic PA and resistance training; and accounted for 39% and 45% of the variance respectively for aerobic PA and resistance training intentions in adults with type-2 diabetes.

2.4.3. Physical activity and exercise in cancer survivors:
TPB appeared to be a useful model to explain PA in kidney cancer survivors (KCS) and intention was strongly correlated with PBC among all TPB constructs. Affective attitude, self-efficacy, and intention were the strongest correlates of total physical activity levels in palliative cancer patients. Constructs from the TPB mediated the associations between adjuvant therapy, cancer invasiveness, age, and exercise. Age and adjuvant therapy also moderated some of the associations within the TPB in bladder cancer survivors.

The TPB explained 34.1% of the variance in exercise behavior with intention and self-efficacy being independent correlates in people with endometrial cancer. The TPB constructs combined to explain 32% of the variance in exercise intentions with affective attitude and perceived behavioral control being the most important determinants in people with brain cancer.

TPB explained 29.1% of the variance in physical activity behavior, with the significant independent correlates being intention and self-efficacy which suggested that interventions designed to promote physical activity in adolescent cancer population should focus on the development of a positive attitude as well as fostering an enhanced sense of self-efficacy.

TPB explained 43% of the variance in exercise intentions. Instrumental attitude and perceived behavioral control were both independent predictors of exercise intentions in multiple myeloma cancer patients. Recommendation only (RO) intervention impacted perceived behavioral control (PBC) in breast cancer patients. Path analyses indicated that PBC was the only construct with a direct effect on exercise and that it mediated the effect of the RO intervention on exercise and explained the null effect of the Recommendation plus referral (RR) intervention.

The independent predictors for exercise adherence in the exercise condition in a randomized controlled trial of exercise in cancer survivors were normative beliefs, and perceived behavioral control. Finally, the independent predictor of exercise contamination in the control condition was intention.

2.4.4. Exercise and physical activity in cardiac rehabilitation:
Attitude, subjective norm, and perceived behavioral control explained 45% and 36% of the variance in exercise intention in breast cancer and prostate cancer survivors respectively, with attitude, subjective norm, and perceived behavioral control each uniquely contributing to intention. Exercise intention explained 30% of the variance in exercise behavior in both population.

Intention and perceived behavioral control were significant determinants of exercise during breast cancer treatment; and attitude and subjective norm were significant determinants of intention. Exercise during colorectal cancer treatment was determined by intention and perceived behavioral control, and intention was determined solely by attitude.

2.5. Measurement of exercise and physical activity using TPB:
Tirado-Gonzalez et al validated the TPB questionnaire in physical activity.
2.6. Miscellaneous:

2.6.1. Psychological: The three cognitive constructs of TPB (attitude, perceived behavioral control, and intention) acted as potential mediators of relationship between social influence constructs such as subjective norm, social support and cohesion, and adherence to structured exercise classes.\(^{51}\)

2.6.2. Education and awareness: Media campaigns and campaign exposure was strongly related to perceived behavioral control and attitudes towards physical activity which together with descriptive norms influenced behavior intention.\(^{52}\)

2.6.3. Type of setting: Use of unstructured exercise setting was involved with greater influence of perceived behavioral control on intention than structured settings.\(^{53}\)

3. Implications for PT- other behavioral models:

Few studies examined the interaction of TPB with other behavioral models. Blue \(^{54}\) said, “The Theory of Planned Behavior is a more promising framework than The Theory of Reasoned Action for the study of exercise because it includes beliefs about control of factors that would facilitate or inhibit carrying out exercise.” Nguyen et al\(^{55}\) combined The Stages of Change (pre-contemplation, contemplation, preparation-1, and preparation-2) model with TPB and found that a logical determination of targeted exercise interventions was possible for individuals at-risk in a cardiac rehabilitation setting. Another popular model was the Transtheoretical model (TTM) which was proposed by Prochaska and DiClemente in 1983.\(^{56}\) The model seemed to be efficient for explaining intention, perceived behavioral control being as important as attitude across health-related behavior categories. The efficiency of the theory, however, varies between health-related behavior categories.\(^{57}\)

Assessment of professionals’ attitudes and intentions\(^{58}\) among physical therapists and students using TPB model is essential to evaluate and explore the complex interplay of psychosocial variables\(^{59}\) both in and between practice, education, research and administrative domains of PT.

4. Role of Journal of Physical Therapy (JPT):

The Journal aims to set a benchmark in publishing research evidence- both original and review articles on TPB and its application in the field of PT, and manuscripts are welcome from authors who think ‘out of the box’.\(^{60}\)

CONFLICTS OF INTEREST:

None identified and/or declared.

REFERENCES:


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