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# REVERSAL THEORY AND SPORTS: TELIC-PARATELIC DOMINANCE AND STATE IMPACTS ON RESPONSES TO ENDURANCE TRAINING

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ABSTRACT

*The primary objective of the study was to examine the influence of two opposite states of meta-motivational state of mind (the "telic" vs. "paratelic" state) and their dominances on emotion and stress responses to endurance training. Th result and outcome of the study indicated that, all participants experienced a more pleasant emotions when performing endurance exercise in the telic state condition. However, when the participants were in the paratelic state of mind, their level of anxiety has shown an increase. These results of the current study has supported the previous research outcomes in this area of study and also suggested that meta motivational dominance is less influential than meta-motivational state of mind.*

***KEY WORD:*** *paratelic, telic, meta-motivational dominance, meta-motivational state, emotion, stress, Endurance*

## INTRODUCTION:

Physical exercise can be helpful for mental health and well-being, with positive effects reported for stress, emotion, affect, mood state, well-being, anxiety, and depression (Ekkekakis & Backhouse, 2014). However, even with the available evidence that has demonstrated the positive influence of exercise on affect and emotional well-being (e.g., Brosse, Sheets, Lett, & Blumenthal, 2002; Ensel & Lin, 2004; Reed & Ones, 2006), a consistent observation is that 50% of individuals who start a structured exercise program will dropout within 6 months (e.g., Abernethy et al., 2013). It has been proposed that one of the main reasons for this is the negative affect/emotion some individuals experience during exercise (Williams, et al., 2008) as differences in affective responses to exercise exist among individuals (Ekkekakis & Backhouse). Thus, individual emotional responses to exercise are of considerable interest to researchers and practitioners aiming to understand exercise experiences (Ekkekakis, Hargreaves, & Parfitt, 2013) as some individuals might have difficulty finding the right exercise or the right "match" for them. To help fully understand the factors that deter some people from exercising, research is needed that examines factors moderating the effects of exercise on affect.

A series of recent studies have also demonstrated the relevance of cognitive and personality variables deriving from Reversal Theory as moderators of the exercise affect relationship (Legrand, Bertucci, & Thatcher, 2009; Legrand & Thatcher, 2011). Reversal theory (RT; Apter, 2001, 2007) emphasizes the dynamic nature of the individual's mental state (known as "motivational" or "meta-motivational" states). Each person exhibits a tendency to spend relatively more time in one state than the other. This has been termed motivational (or meta-motivational) dominance. Whilst we prefer to experience our dominant state, there can be a period of time where the individuals, regardless of dominance, tend to spend a time in a certain state due to contingencies and/or frustrations, which is referred to as a "state-balance" (Apter, 2001). State balance will change over time (Apter & Larsen, 1993), for example, a paratelic dominant individual can be in a telic state while exercising for a health purpose but, as soon as he/she finishes exercising, the state will shift to a paratelic state which is the preferred state for this individual.

Although Reversal Theory (RT) has posited the existence of four pairs of motivational states, the "telic-paratelic" pair is the most relevant to the context of exercise and affect since telic and paratelic states are proposed to influence the relationship between arousal and affect/emotion in opposing ways (Apter, 1982, 2001). As we intended to manipulate state-balance, a method for manipulating state combinations has not yet been determined but an established method of manipulating the telic-paratelic states has been used in previous research. Thus, given that research to date indicates this is the most relevant pair for exercisers (e.g., Kerr, Wilson, Svebak, & Kirkcaldy, 2006b; Kuroda, Thatcher, & Thatcher, 2011; Thatcher, Kuroda, Legrand, & Thatcher, 2011), we focused here only on the telic-paratelic state pair.

The paratelic state is characterised by the fact that one wants to have fun and to experience what one is doing as strongly and intensely as possible (this has been referred to as an "arousal-seeking" mode). In contrast, the core value of the telic state is that of work and seriousness. Any barrier or frustration of any kind that may impede achievement of identified objectives will be likely to increase arousal that will subsequently be experienced as anxiety (the "telic" state is also known as an "arousal-avoidance" mode). Therefore, according to RT, the preferred level of exercise intensity is low in the telic state (i.e., lower levels of stimulation should be associated with pleasant affect/emotion and higher levels would be experienced as aversive). In contrast in the paratelic state, the preferred level of intensity is high (i.e., the dose-response curve exhibits the opposite pattern). There- fore, individuals who are telic dominant prefer activities that have a telic emphasis and those who are paratelic dominant prefer activities with a paratelic

orientation. It is suggested that in part this is because more positive affect will result from exercise performed when state and dominance are matched than when they are mismatched.

Results have consistently indicated that extremely paratelic dominant individuals prefer more explosive and spontaneous sports, such as baseball, cricket, touch football, surfing, and windsurfing, whereas extremely telic dominant individuals prefer en- durance and repetitive sports, such as distance running and rowing (e.g., Cogan & Brown, 1999; Kerr, 1991; Svebak & Kerr, 1989). These established relationships between preferred activity, state and meta-motivational dominance might help to explain inter-individual differences observed in emotional responses to exercise and highlight the need for an interactive approach, not one that focuses on either person- related or situational factors, or, in RT terms, on only dominance or state. Given that telic and paratelic dominant individuals prefer different types of exercise activities (e.g., Kerr et al., 2006a), their emotion and stress responses may differ when performing different types of activity and in different meta-motivational states.

Increased understanding of an individual's experience of exercise might help exercise professionals to engage people in appropriate, tailored exercise programmes. It is clear that increased insight could be gained by examining the interactive effect of personality and state factors in relation to different types of exercise. Only limited research has explored the interactive influence of meta-motivational state and dominance within exercise contexts and none has yet examined this influence on emotional responses to endurance training. Meta-motivational state balance was manipulated to ensure that participants exercised predominantly in both the telic and paratelic states, and, their emotional and stress responses were assessed prior to, during and following two different exercise sessions. The hypotheses for the study was:

During endurance training in pre- dominantly the telic state, telic dominant participants will experience less stress and report more positive emotion than paratelic dominant participants, and vice versa for paratelic dominant participants.

**Method**

**Selection of Subjects**

Participants for the study were the students in Lakshmibai National University of Physical Education, Gwalior. All participants provided written informed consent to participate in the initial sampling phase. They completed the Paratelic Dominance Scale (PDS; Cook & Gerkovich, 1993), scores on which range

between 0-30, with higher scores indicating paratelic dominance (PD) and lower scores indicating telic dominance (TD). Study participants were then purposely sampled from this pool based on their PDS score. Age, sex, and frequency of exercise per week were recorded for each participant. There were 14 Participants (7 males and 7 females) in telic dominance group and 12 in paratelic dominance. There were 7 males and 7 females in the TD group, with a mean exercise frequency of 4.0 times per week. The PD group comprised 7 males and 5 females, with a mean exercise frequency of 3.1 times per week.

**SELECTION OF TEST ITEMS**

**Paratelic Dominance Scale (PDS; Cook & Gerkovich, 1993).** The PDS includes 30 items representing subscales: playfulness, spontaneous and arousal seeking. Each subscale has 10 items with a true/false answer format. Responses are scored with 0 = telic option and 1 = paratelic option, resulting in a scoring range of 0 30 (0 being extremely telic dominant and 30 being extremely paratelic dominant). The PDS is used frequently to measure individuals' meta-motivational dominance (Bindarwish & Tenenbaum, 2006; Kuroda et al., 2011; Thatcher et al., 2011). The alpha coefficient for odd-numbered items in the study by Cook and Gerkovich (1993) was 0.87 and for even- numbered items was 0.86. No sex differences have been identified in previous samples and population data demon- strate a normal distribution, as indicated by acceptable skew- ness and kurtosis.

**Telic State Measure (TSM; Svebak & Murgatroyd, 1985).** The TSM includes 5 items to determine if an individual is currently in the telic or paratelic state and their associated arousal and effort. The first item was used in this study to assess serious-playful mood as in previous research (Perkins, Wilson, & Kerr, 2001; Thatcher et al., 2011). This item includes a six-point rating scale anchored by the adjec- tives, *serious* and *playful*. Low scores (1-3) indicate the telic state and high scores (4-6) indicate the paratelic state.

**Tension and Effort Stress Inventory (TESI; Svebak, 1993).** There are 20 items in the TESI to measure tension stress (2 items), effort stress (2 items), pleasant emotions (8 items), and unpleasant emotions (8 items), using a rating scale ranging from 1 (*not at all*) to 7 (*very much*). This study used the first four items that ask respondents to report their levels of internal and external tension and effort stress. Of the remaining 16 items assessing emotions, only the first four were used here (relaxation, anxiety, excitement and boredom; Apter, 1982) as these are the most relevant to the telic and paratelic states. Previous research has similarly used selected items from the TESI (Perkins et al., 2001) and has supported

its validity and reliability with Cronbach's alphas of 0.88 and 0.75 for pleasant and unpleasant emotion items, respectively (e.g., Males & Kerr, 1996; Svebak, 1993).

**ANALYSIS of DATA**

In the present study there were three independent variables (Meta-motivational dominance, State condition and time of TESI completion). Dependent variables were the TESI scores (relaxation, anxiety, excitement, boredom, internal tension stress, internal effort stress, external tension stress, and external effort stress). Eight 2 (Dominance) x 2 (State conditions) x 2 (Time points) mixed- design ANOVAs were performed, with alpha set at .05. Significant effects were examined using *t*-tests with Bonferroni correction.

**RESULTS**

Telic State Measure item responses indicated that the state balance manipulation was effective. In the current study the state main effect was significant, with a large effect size ($F$ (1, 11) = 16.33, $p < 0.002$, partial $\eta^2 = 0.60$). Again, participants were significantly more playful in the paratelic state than in the telic state condition ($t(35) = -4.72$, $p < 0.001$).



**Table No 1 The Descriptive statistics outcome of the dependent variables of Telic and paratelic dominant Subjects**

| DEPENDENT VARIABLES | Telic/ Paratelic Condition | TELIC DOMINANCE | | | | PARATELIC DOMINANCE | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Pre-Test | | Post Test | | Pre-Test | | Post Test | |
| | | M | SD | M | SD | M | SD | M | SD |
| RELAXATION | T | 4.1 | 1.4 | 2.7 | 1.6 | 4.8 | 1.5 | 4.2 | 1.4 |
| | P | 4.5 | 1.8 | 2.9 | 1.2 | 5.4 | 1.8 | 4.8 | 1.3 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **ANXIETY** | T | 1.8 | 1.1 | 2.4 | 1.6 | 1.8 | 1.3 | 1.5 | 0.9 |
| | P | 1.5 | 0.8 | 2.5 | 1.4 | 1.4 | 0.5 | 1.7 | 1.0 |
| **EXCITEMENT** | T | 1.9 | 0.9 | 2.9 | 1.0 | 2.2 | 1.0 | 2.6 | 1.1 |
| | P | 3.2 | 1.2 | 3.4 | 1.4 | 3.3 | 1.1 | 3.3 | 1.7 |
| **BOREDOM** | T | 3.0 | 2.2 | 2.1 | 1.3 | 3.7 | 1.8 | 2.3 | 1.6 |
| | P | 1.4 | 0.6 | 1.6 | 0.8 | 1.3 | 0.7 | 1.6 | 1.0 |
| **EXTERNAL TENSION STRESS** | T | 2.9 | 1.7 | 3.9 | 1.1 | 2.2 | 0.8 | 2.6 | 1.2 |
| | P | 2.4 | 1.3 | 3.3 | 1.2 | 1.6 | 0.8 | 2.4 | 1.2 |
| **INTERNAL TENSION STRESS** | T | 2.6 | 1.4 | 3.9 | 1.1 | 1.9 | 0.9 | 2.9 | 1.2 |
| | P | 2.6 | 1.3 | 3.8 | 1.1 | 1.4 | 0.7 | 2.3 | 1.2 |
| **EXTERNAL EFFORT STRESS** | T | 2.5 | 1.5 | 3.6 | 1.3 | 2.0 | 1.2 | 2.5 | 1.6 |
| | P | 2.7 | 1.3 | 3.4 | 1.3 | 1.5 | 0.7 | 2.3 | 1.3 |
| **INTERNAL EFFORT STRESS** | T | 2.6 | 1.6 | 3.7 | 1.4 | 1.8 | 0.9 | 2.8 | 1.4 |
| | P | 2.7 | 1.5 | 4.2 | 1.4 | 1.4 | 0.5 | 2.3 | 1.5 |



**Table No 2 The Inferencial statistics outcome of the dependent variables of Telic and paratelic dominant Subjects**

| **DEPENDENT VARIABLES** | **F Value (ANOVA Outcome)** | | | |
|---|---|---|---|---|
| | Time (Main Effect) | Time X Dominance (Interaction Effect) | Time X Condition (Interaction Effect) | Time X Dominance X Condition (Interaction Effect) |
| **RELAXATION** | 22.19** | 3.76 | <1 | <1 |
| **ANXIETY** | 5.68* | 5.68* | 5.46* | <1 |
| **EXCITEMENT** | 4.17 | 1.35 | 5.28* | <1 |

| | | | | |
|---|---|---|---|---|
| **BOREDOM** | 6.07* | <1 | 16.56** | <1 |
| **EXTERNAL TENSION STRESS** | 18.84** | <1 | <1 | 3.20 |
| **INTERNAL TENSION STRESS** | 27.86** | <1 | <1 | <1 |
| **EXTERNAL EFFORT STRESS** | 16.89** | <1 | <1 | 1.94 |
| **INTERNAL EFFORT STRESS** | 16.80** | <1 | <1 | <1 |

***p < .05 **p < .01**

The time x condition interactions for boredom ($F$ (1, 24) = 16.56, $p$ < .001, partial $\eta^2$ = .41), excitement ($F$ (1, 24) = 5.28, $p$ = .031, partial $\eta^2$ = .18), and anxiety ($F$ (1, 24) = 5.46, $p$ = .028, partial $\eta^2$ = .19) were significant. More specifically, for both dominance groups, exercise had a positive impact on boredom and excitement but only when exercise was performed in the telic condition. By contrast, exercise increased anxiety when in the paratelic condition, but not in the telic condition. Stress responses significantly increased pre to post-exercise for both groups of participants in both experimental conditions, with even larger effect sizes.



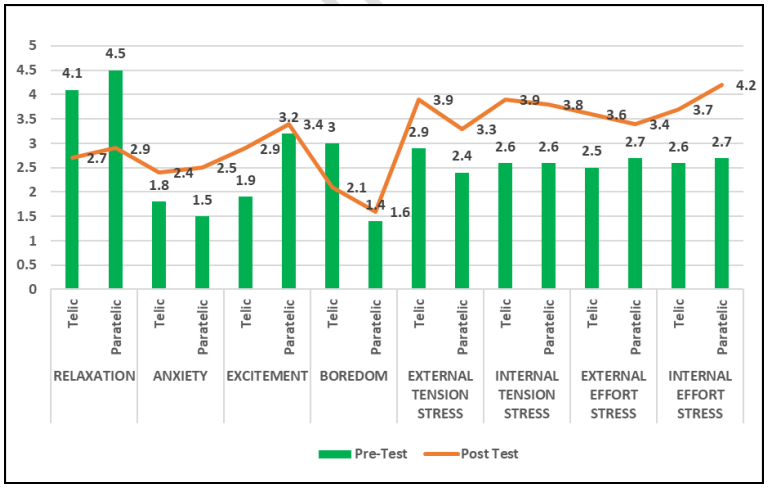


**Figure 1. Graphical representation of Mean Scores of Telic Dominant Subjects**

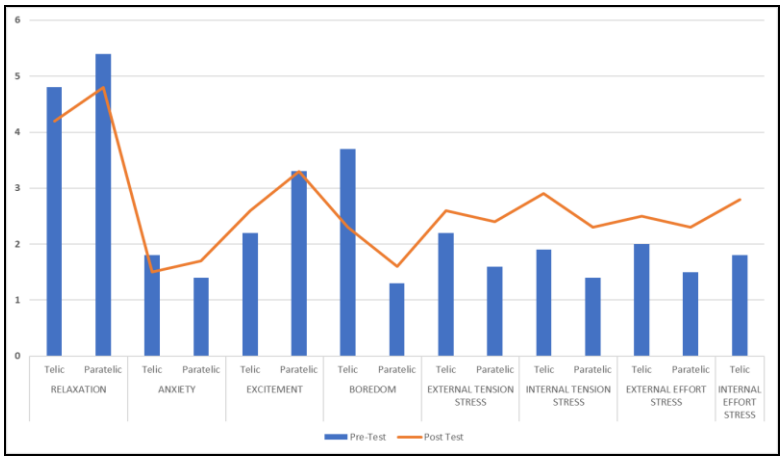


**Figure 1. Graphical representation of Mean Scores of Paratelic Dominant Subjects**

## DISCUSSION AND CONCLUSION

Using RT, the responses in relation to telic and paratelic meta-motivational dominance and manipulated meta-motivational state balance was observed. This study did not support for the dominance-state-balance misfit (a mismatch between meta-motivational dominance and state).

The study further revealed an interaction between dominance and state but not in line with the dominance-state-balance misfit effect. The increase in pleasant emotion (excitement) and decrease in unpleasant emotion (boredom) observed in the telic state condition and increased anxiety in the paratelic state condition, in both dominance groups, supports previous findings that state is more influential than dominance (e.g., Legrand & Thatcher, 2011). More positive responses have been identified previously when exercise was performed in the paratelic state, but our results contradicted this. For some individuals, the exercise intensity for this study was low and this may have caused them to positively perceive that the telic state (i.e., being goal oriented) helped, as it gave them a focus during a longer exercise bout regardless of their dominance. In contrast, not having a goal in the paratelic condition created anxiety as they were exercising without a clear goal for longer.

Although the exercise was self-paced, some participants might well have exercised over their anaerobic threshold by the end of the exercise (while for others the exercise did not exceeded their anaerobic threshold). Thus, changes in emotions and stress were observed regardless of dominance or state.

The main limitation of the study is the focus only on the telic-paratelic motivational pair. Whilst this is a salient pair within an exercise context, complete understanding of the individual's psychological state requires a focus on all eight meta-motivational states. Further, meta-motivational states represent our subjective phenomenology and therefore we might better understand the complex interaction of state, dominance and exercise with studies that incorporate qualitative methods.

## REFERENCES

Abernethy, B., Kippers, V., Hanrahan, S. J., Pandy, M. G., McManus, A. M., & Mackinnon, L. (2013). *Biophysi-cal foundations of human movement (3rd edition)*. Cham- paign, IL: Human Kinetics.

Barnett, F. (2013). The effect of exercise on affective and self-efficacy responses in older and younger women. *Jour- nal of Physical Activity & Health, 10,* 97-105.

Ekkekakis, P., & Backhouse, S. H. (2014). Physical activ- ity and feeling good. In A. Papaioannou & D. Hackfort (Eds.), *Routledge companion to sport and exercise psy- chology: Global perspectives and fundamental concepts* (pp. 687-704). New York: Routledge.

Ekkekakis, P., Hargreaves, E. A., & Parfitt, G. (2013). In- vited guest editorial: Envisioning the next fifty years of research on the exercise-affect relationship. *Psychology of Sport and Exercise*, *14*, 751-758.

Kuroda, Y., Hudson, J., & Thatcher, R. (2015). Motivational state and personality in relation to emotion, stress, and HRV responses to aerobic exrcise. *Journal of Psychophysiology*, *29*, 147-160.

Kuroda, Y., Thatcher, J., & Thatcher, R. (2011). Metamoti- vational state and dominance:

Links with EMG gradients during isokinetic leg extension and a test of the misfit effect. *Journal of Sports Sciences*, *29*, 403-410.

Legrand, F. D., & Thatcher, J. (2011). Acute mood responses to a 15-minute long walking session at self-selected inten- sity: Effect of an experimentally-induced telic or paratelic state. *Emotion*, *11*, 1040-1045.

Rose, E. A., & Parfitt, G. (2012). Exercise experience influ- ences affective and motivational outcomes of prescribed and self-selected intensity exercise. *Scandinavian Journal of Medicine & Science in Sports, 22,* 265-277.

Singh Mandeep; *Evaluation And Improvement Of Sports Techniques Through Biomechanical Updated Analyzing Technology*; University News, Journal of Higher Education Association of Indian Universities; Vol.48 No.05, Feb 01-07, 2010,pp.54-57

Singh Mandeep; Analysis Of Set Shot In Basketball In Relation With The Time To Perform The Course And Displacement Of Center Of Gravity; American Journal of Sports Science-USA; Vol.2 No.5

Singh Mandeep; A Study Of Aggression Among Adolloscent National Players In Relation To Sex, Famly And Ordinal Position; Journal of Sports, Physical Education Allied and Alternative Sciences; Vol.01 No.01 July2010,pp 50-55

Thatcher, J., Kuroda, Y., Legrand, F., & Thatcher, R. (2011). Stress responses during aerobic exercise in relation to mo- tivational dominance and state. *Journal of Sports Sci- ences*, *29*, 299-306.

Thatcher, J., Kuroda, Y., Thatcher, R., & Legrand, F. (2010). Perceptual and cognitive responses during exercise: Rela- tionships with metamotivational state and dominance. *Eu- ropean Journal of Sport Science, 10,* 199-207.