

The Role of Mentality in the Performance and Goal Achievement of High School Spring Track Athletes

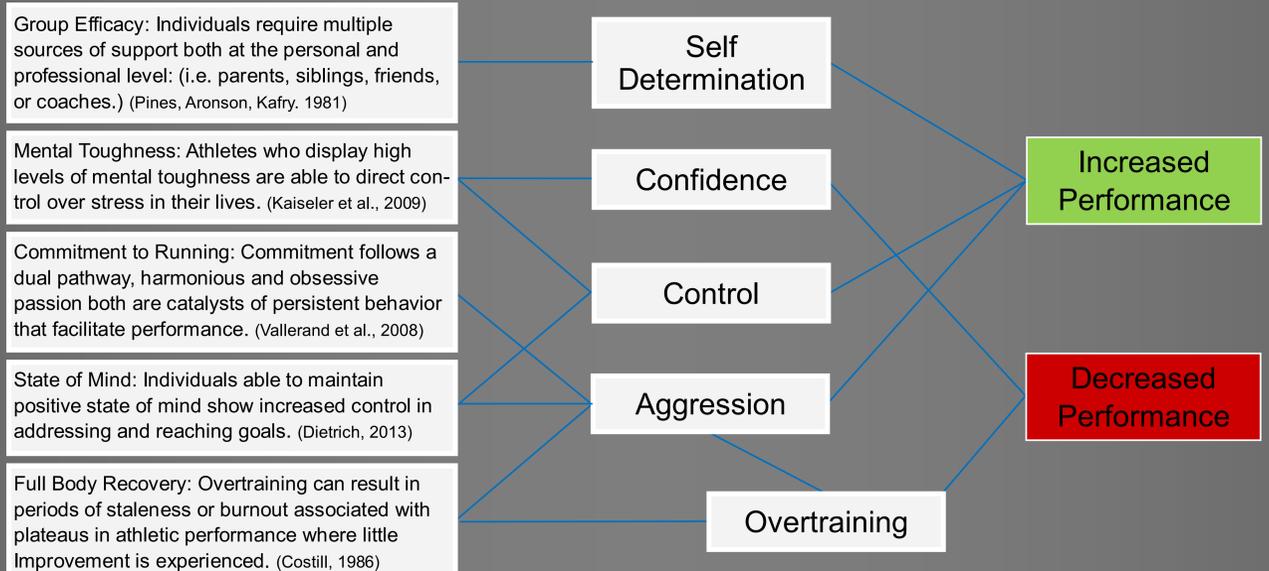
Review of Literature

- Runners must seek every source of development to continue to improve at high levels of competition (Loughran et al., 2013)
- An overlooked facet of training is mental training, the act of improving the body by strengthening the mind (Patrick and Hrycaiko, 1998)
- Complex nature of the mind makes it important to decipher which mental aspects are essential to address in mental training



- State of Mind:** Mood or mental state at a particular time.
- Full Body Recovery:** Normal state of health, mind, and strength.
- Commitment to Running:** Personal devotion to running and training.
- Mental Toughness:** A collection of attributes that allow a person to persevere through difficult circumstances.
- Group Efficacy:** Individual's perceived capability to perform as a team.

Previous Connections



Research Question

What correlations can be drawn between mental characteristics and goal achievement in high school spring track athletes?

- H₁: Athletes who most fully achieve their goals will be those who retain the highest levels of commitment to running throughout the season.
- H₂: Athletes who experience the most growth in their group environment questionnaire scores will also exhibit the most growth in goal achievement.
- H₃: Athletes who are able to consistently recover from training weeks will also be able to consistently achieve the goals they have set.
- H₄: Athletes with the highest initial mental toughness questionnaire scores will have the most success in reaching their midseason and end of season goals.
- H₅: Athletes who consistently achieve their goals will be those who retain high levels of positive state of mind.
- H₀: There will be no correlation between the respective mental characteristic and the athlete's goal achievement.

Methods

Participants

- High school athletes competing on the varsity spring track team
- Ages 13-18 years old
- Must consistently compete in a running event
- 102 total participants
 - 55 male
 - 47 female
- Average experience: 3.37 years
- SD: 2.12 years



e.standards.net

Surveying

Goals and Performance

- Performance measured through goals set by athletes.
- Personal goals align with future aspirations of each athlete, maintaining motivation throughout the season.



Beginning of Season

- Goals: Personal running goals that athletes wished to attain by the mid-season mark and goals that they wished to attain by the end of the season.
- Group Environment Questionnaire (Carron et al., 1985)
- Sports Mental Toughness Questionnaire (Sheard et al., 2009)
- Commitment to Running Scale (Zarauz Sancho, 2011)



Weekly Survey

- Positive State of Mind (Horowitz, 1988)
- Recovery Cue (Kellmann & Kallus, 2001)



Middle of Season

- Athletes noted how well they had reached the mid-season goals they set at the beginning of the season.
- Positive State of Mind (Horowitz, 1988)
- Recovery Cue (Kellmann & Kallus, 2001)



Weekly Survey

- Positive State of Mind (Horowitz, 1988)
- Recovery Cue (Kellmann & Kallus, 2001)



End of Season

- Athletes noted how well they had reached the end of season goals they set at the beginning of the season.
- Group Environment Questionnaire (Carron et al., 1985)
- Sports Mental Toughness Questionnaire (Sheard et al., 2009)
- Commitment to Running Scale (Zarauz Sancho, 2011)

Results and Discussion

Group Efficacy

Group	M _{MIN}	M _{IMP}	M _{EXC}	T	Df	p	cohen's d
PGB	116.0	--	114.0	0.329	44.8	0.628	0.095
PGE	116.3	--	124.1	-1.414	30	0.084	-0.489
TGB	112.7	--	114.0	-0.085	4.9	0.468	-0.055
TGE	112.9	--	129.5	-2.256	5.1	0.036	-1.108

- Significant correlation between end of season GEQ scores and both personal goal and team goal achievement
- Athletes do not need to begin season with high GEQ but can achieve goals by developing a GEQ mentality by the end of the season

Mental Toughness

Group	M _{MIN}	M _{IMP}	M _{EXC}	T	Df	p	cohen's d
PGB	39.22	--	41.00	-1.044	46	0.151	-0.301
PGE	38.40	--	42.95	-2.427	32	0.011	-0.813
TGB	38.43	--	42.60	-2.047	7.6	0.038	-0.866
TGE	39.42	--	38.50	0.308	4.3	0.614	0.173

- Significant correlations: (End of season MT correlated with Personal Goals) and (Beginning of Season MT scores correlated with Team Goals)
- Opposing correlations confound implementation of MT

Commitment to Running

Group	M _{MIN}	M _{IMP}	M _{EXC}	T	Df	p	cohen's d
PGB	41.74	--	42.44	-0.302	44	0.382	-0.088
PGE	40.93	--	42.58	-0.564	29.7	0.288	-0.195
TGB	39.43	--	44.60	-1.205	5.5	0.139	-0.661
TGE	38.21	--	45.00	-1.801	5.4	0.064	-0.834

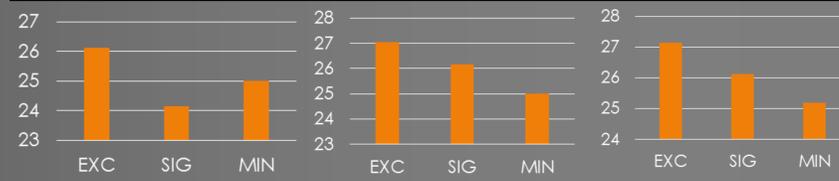
- Significant correlation between team goal achievement and CR scores throughout the course of the season
- Personal goals were not influenced through the CR pathway

Positive State of Mind



- Trend between PSM and goal achievement
- Most improved athletes and least improved athletes exhibited higher PSM scores than middle group
- Middle group of athletes may have been stressed due to constantly coming up short of their goals

Mental Recovery



- Direct correlation between MR scores and goal achievement over the course of the season
- Weak correlations in week 3
- Strong MR mentality is important to goal achievement at every interval over the course of a season

Personal Goal Setting (PGS)

Group	Stay in shape for other sports	I like to be part of the competitive track team	Improve physical ability	Be part of a group activity	Someone else wanted me to
Exceeded Goals	0.6500	0.7500	0.8500	0.5000	0.1500
Significantly Improved	0.5454	0.7272	0.8638	0.6818	0.1363
Minimally Improved	0.2105	1.0000	0.8947	0.7895	0.3158

Data collected at the beginning asked why athletes chose to participate in spring track:

- Proportion of minimally improved athletes who stated that they wanted to stay in shape for other sports was less than half that of the other more successful groups
- Proportion of minimally improved athletes who stated that someone else had wanted them to participate in spring track was more than twice that of the other more successful groups

Conclusions

- 4 out of the 5 studied variables were noticeably significant: Group Efficacy, Commitment to Running, Mental Recovery, and Positive State of Mind.
- Specifically, athletes who develop a high GEQ mentality by the end of the season are most likely to achieve their goals. Additionally, athletes who begin the season with and maintain high levels of CR and MR are prone to achieve their goals. However, CR scores have only been correlated to team goals, leaving personal goals uninfluenced. Finally, high PSM scores are important to, but do not necessarily result in athletic goal achievement.
- Athletes may find further success in goal achievement through personal motivation and continued practice, as interpreted from the PGS data.

Future Research

Implementation

Current Data:

- Confirms importance of four studied variables (GEQ, CR, PSM, MR)
- Determined most important intervals to address each specific mental characteristic in athletes

Future Research:

- Determine process to develop each mental characteristic in athletes that do not already possess these traits
- Determine implementation of current research in other sports



running.competitor.com



changingthegameproject.com

Bibliography

Amneus, J., Babbitt, D., & Baker, B. (2012). A philosophy for coaching high school athletes. In *Track and Field Coaching Manual* (pp. 10-17). Los Angeles: LA84 Foundation.

Armstrong, R. L. (1989). Perceptions of stressors by high school students. *Journal of Adolescent Research, 4*(4), 443-461.

Blanchard, C. M., Amiot, C. E., Perreault, S., Vallerand, R. J., & Provencier, P. (2009). Cohesiveness, coach's interpersonal style and psychological needs: Their effects on self-determination and athletes' subjective well-being. *Psychology of Sport and Exercise, 10*(5), 545-551.

Boyce, B. A., Johnston, T., Wayda, V. K., Bunker, L. K., & Eliot, J. (2001). The effects of three types of goal setting conditions on tennis performance: a field-based study. *Journal of Teaching in Physical Education, 20*(2), 188-200.

Carron, A. V., Widmeyer, W. N., & Brawley, L. R. (1985). The development of an instrument to assess cohesion in sport teams: The Group Environment Questionnaire. *Journal of Sport Psychology, 7*(3), 244-266.

Cohen, J. (1988). Statistical power analysis for the behavioral sciences. *CDA*.

Costill, D. L. (1986). *Inside running: basics of sport physiology*. Benchmark Press.

Donahue, E. G., Rip, B., & Vallerand, R. J. (2009). When winning is everything: On passion, identity, and aggression in sport. *Psychology of Sport and Exercise, 10*(5), 526-534.

George, T. R., & Feltz, D. L. (1995). Motivation in sport from a collective efficacy perspective. *International Journal of Sport Psychology, 26*(1), 98-116.

Harrison, R. J. (2011). Peak performance in sport: Identifying ideal performance states and developing athletes' psychological skills. *Sport, Exercise, and Performance Psychology, 1*(5), 3-18.

Hogan, B. E., Linden, W., & Najarian, B. (2002). Social support interventions: Do they work?. *Clinical Psychology Review, 22*(3), 381-440.

Horowitz, M. A., R. D. L. Adler, N., & Kegeles, S. (1988). A scale for measuring the occurrence of positive states of mind: A preliminary report. *Psychosomatic Medicine, 50*(5), 477-483.

Kaiseler, M., Polman, R., & Nicholls, A. (2009). Mental toughness, stress, stress appraisal, coping and coping effectiveness in sport. *Personality and Individual Differences, 47*(7), 728-733.

Kellmann, M. (2002). *Enhancing recovery: Preventing underperformance in athletes*. Human Kinetics.

Kellmann, M., & Kallus, K. W. (2001). *Recovery-stress questionnaire for athletes: user manual* (Vol. 1). Human Kinetics.

Kleine, D. (1990). Anxiety and sport performance: A meta-analysis. *Anxiety Research, 2*(2), 113-131.

Levy, A. R., Polman, R. C., Clough, P. J., Marchant, D. C., & Earle, K. (2006). Mental toughness as a determinant of beliefs, pain, and adherence in sport injury rehabilitation. *Journal of Sport Rehabilitation, 15*(3), 246-254.

Little, B. R. (1983). Personal projects: a rationale and method for investigation. *Environment and behavior, 15*(3), 273-309.

Loughran, M. J., Hamilton, D., Downey, P. A., Winters, C., & Moles, T. (2013). Going the Distance: An Interdisciplinary Seminar Series on a University Campus in Support of Training for Recreational Distance Running. *Recreational Sports Journal, 37*(1), 55-65.

Morgan, W. P. (1985). Selected psychological factors limiting performance: A mental health model. *Limits of human performance, 70-80*.

Newcombe, P. A., & Boyle, G. J. (1995). High school students' sports personalities: Variations across participation level, gender, type of sport, and success. *International Journal of Sport Psychology, 26*, 277.

Patrick, T. D., & Hrycaiko, D. W. (1998). Effects of a mental training package on an endurance performance. *Sport Psychology, 12*, 283-299.

Pines, A. M., Aronson, E., & Kafry, D. (1981). *Burnout*. New York: Free Press.

Ruehlman, L. S., & Karoly, P. (1991). With a little flak from my friends: Development and preliminary validation of the Test of Negative Social Exchange (TENSE). *Psychological Assessment: A Journal of Consulting and Clinical Psychology, 3*(1), 97.

Sheard, M., Golby, J., & van Wersch, A. (2009). Progress toward construct validation of the Sports Mental Toughness Questionnaire (SMTQ). *European Journal of Psychological Assessment, 25*(3), 186.

Sheldon, K. M., & Kasser, T. (1998). Pursuing personal goals: Skills enable progress, but not all progress is beneficial. *Personality and Social Psychology Bulletin, 24*(12), 1319-1331.

Svedenby, J., & Sjodin, B. (1985). Physiological characteristics of elite male runners in and off-season. *Can J Appl Sport Sci, 10*(3), 127-33.

Vallerand, R. J. (2004). Intrinsic and extrinsic motivation in sport. *Encyclopedia of applied psychology, 2*(10).

Vallerand, R. J., Blanchard, C., Mageau, G. A., Koestner, R., Ratelle, C., Leonard, M., ... & Marsolais, J. (2003). Les passions de l'ame: on obsessive and harmonious passion. *Journal of personality and social psychology, 85*(4), 756.

Vallerand, R. J., Mageau, G. A., Elliot, A. J., Dumais, A., Demers, M. A., & Rousseau, F. (2008). Passion and performance attainment in sport. *Psychology of Sport and Exercise, 9*(3), 373-392.

Veale, D. M. W. (1991). Psychological aspects of staleness and dependence on exercise. *Int J Sports Med, 12*(suppl 1), S19-22.

Wadey, R., Clark, S., Podlog, L., & McCullough, D. (2013). Coaches' perceptions of athletes' stress-related growth following sport injury. *Psychology of Sport and Exercise, 14*(2), 125-135.

Wang, M. T., & Eccles, J. S. (2012). Social support matters: Longitudinal effects of social support on three dimensions of school engagement from middle to high school. *Child development, 83*(3), 877-895.

Wilmore, J. H., Costill, D. L., & Gleim, G. W. (1995). *Physiology of Sport and Exercise*. *Medicine & Science in Sports & Exercise, 27*(5), 792.

Woodman, T., Akhurst, S., Hardy, L., & Beattie, S. (2010). Self-confidence and performance: A little self-doubt helps. *Psychology of Sport and Exercise, 11*(6), 467-470.

Zarauz Sancho, A., & Ruiz-Juan, F. (2011). Commitment And Negative Addiction to Training And Competition For Marathoners. *International Journal of Medicine and Science of Physical Activity and Sport, 11*(44), 817-834.