

Copyright is owned by the Author of the thesis. Permission is given for a copy to be downloaded by an individual for the purpose of research and private study only. The thesis may not be reproduced elsewhere without the permission of the Author.

**Flow in New Zealand High-Performance Athletes and their Intentions to Use Regulated
Breathing**

A thesis presented in partial fulfilment of the requirements for the degree of

Master of Science

in

Psychology

at Massey University, Auckland

New Zealand.

Jay Andrew Barrett

2018

Abstract

Flow, or being “in the zone” (Jackson & Csikszentmihalyi, 1999, p. 12), is associated with athletes’ best-perceived performance (Jackson, Thomas, Marsh, & Smethurst, 2001). Practising regulated breathing could be associated with experiencing flow; the current research sought to identify this potential relationship with New Zealand high-performance adult athletes. New Zealand high-performance adult athletes’ intentions to use regulated breathing in two behaviours (‘practising regulated breathing in a training routine’ or ‘using regulated breathing as a mental skills tool during competition’) along with the components of an individual’s intentions (instrumental and experiential attitudes, injunctive and descriptive norms and capacity and autonomy; Fishbein & Ajzen, 2010) were also researched. A cross-sectional survey was used to gather data. A *t*-test showed there was no statistically significant difference in the frequency flow was experienced between participants currently practising regulated breathing against those that were not, $t(40) = 0.96, p = .342$. Descriptive statistics and one-way ANOVAs showed the majority of the sample responded that they intended to practice regulated breathing in a training routine (64%) and use regulated breathing as a mental skills tool during competition in the future (76%) with no significant difference across the competition level competing at, $F(2,87) = 0.26, p = .774$ and $F(2,87) = 0.56, p = .575$, respectively. Finally, multiple linear regression models showed instrumental attitudes were the only significant predictor of intentions to perform regulated breathing in a training routine (Beta = .68, $p < .001$) or during competition as a mental skills tool (Beta = .82, $p < .001$). Participants’ components (instrumental and experiential attitudes, injunctive and descriptive norms and capacity and autonomy) estimated 67% of the variation in their intentions to practice regulated breathing in a training routine and 70% of the variation in their intentions to use regulated breathing as a mental skills tool during competition. Further evidence is needed to confirm the relationship between practising regulated breathing and how frequently flow is experienced. However, regulated breathing interventions could be appealing to New Zealand high-performance athletes.

Acknowledgements

I would like to thank my supervisor Dr Matt Williams for all the help, guidance and knowledge he provided me. Matt's help has been amazing where he has made the whole process exciting. Also, thanks to my secondary supervisor Jhan Gavala. Jhan's expertise and practical knowledge in sports psychology help shaped my research in a positive way.

Thanks to Massey University for supporting me in my research by funding the use of validated psychometric instruments; It is much appreciated.

To all the athletes that took the time to complete my research, I am very thankful. Also, thanks to those that shared my recruitment message to athletes; without their help I would not have been able to get as many participants as I did.

Thanks to my partner Isabelle for constantly looking out for me, giving me constant encouragement and making sure I kept myself healthy. She kept me positive with a smile through the whole research project.

To my family and friends, thanks for the constant encouragement, support and interest through the whole project, it is much appreciated.

To OPRA Psychology Group and Health and Performance Fitness Ltd., thank you for being flexible with me and my work situation over the study period.

Contents

Flow in New Zealand High-Performance Athletes and their Intentions to Use Regulated Breathing	i
Abstract	ii
Acknowledgements	iii
List of Tables and Figures	vi
Flow in New Zealand High-Performance Athletes and their Intentions to Use Regulated Breathing	1
A Flow Experience	1
A Flow Experience and Athletic Performance	1
Another Explanation of a Psychological Performance State	4
The Practice of Regulated Breathing.....	6
Practising Regulated Breathing and Experiencing Flow	14
The Reasoned Action Approach.....	17
The Reasoned Action Approach and Other Intention Models.....	20
Hypothesis One	23
Research Questions	24
Methods	28
Participants	28
Materials and Measures	30
Research Design	38
Procedure.....	38
Data Analysis.....	40
Results	44

Descriptive Statistics.....	44
The Relationship between Practising Regulated Breathing and Dispositional Flow	46
Intentions to Practice Regulated Breathing.....	47
Intentions to Practice Regulated Breathing by Competition Level.....	49
Intentions by Sport Type.....	50
Tests of the Reasoned Action Approach.....	51
Conventional Content Analyses.....	58
Discussion	67
Summary of Findings in Relation to Study Objectives.....	67
The Relationship between Practising Regulated Breathing and the Frequency of Experiencing Flow	70
Intentions to Practice Regulated Breathing.....	73
Variation of Intentions Explained by the Components of the Reasoned Action Approach....	75
Limitations and Future Direction of Research.....	77
Conclusions and Implications	81
References.....	83
Appendix A: Recruitment Messages.....	89
Appendix B: Recruitment Poster	92
Appendix C: Information Sheet	94
Appendix D: Questionnaire and Research Summary and Lucky Draw Entry	98
Appendix E: Pre-registration	104
Appendix F: Assumption Checks	117
Appendix G: Other Checks Associated with Linear Regression	125

List of Tables and Figures

Tables

Table 1 <i>Gender and Competition Level Demographic Information</i>	29
Table 2 <i>Experience Using Regulated Breathing when Considering Competition Level</i>	29
Table 3 <i>Descriptive Statistics and Cronbach's Alpha Coefficient Estimates from Variables</i>	45
Table 4 <i>Dispositional Flow by Regulated Breathing Experience</i>	46
Table 5 <i>Intentions to Use Regulated Breathing as a Mental Skills Tool During Competition when Split by Sport Type</i>	51
Table 6 <i>Pearson Correlations between Intentions to Practice Regulated Breathing in a Training Routine and the Six Components of the RAA</i>	53
Table 7 <i>Multiple Linear Regression Coefficient Table to Answer Research Question Six</i>	54
Table 8 <i>Pearson Correlations Between Intentions to Use Regulated Breathing as a Mental Skills Tool During Competition and the Six Components of the RAA</i>	56
Table 9 <i>Multiple Linear Regression Coefficient Table to Answer Research Question Seven</i>	57
Table 10 <i>Conventional Content Analysis on Why Participants Would Practice Regulated Breathing in a Training Routine</i>	59
Table 11 <i>Conventional Content Analysis on Why Participants Would Not Practice Regulated Breathing in a Training Routine</i>	61
Table 12 <i>Conventional Content Analysis on Why Participants Would Use Regulated Breathing as a Mental Skills Tool During Competition</i>	63
Table 13 <i>Conventional Content Analysis on Why Participants Would Not Use Regulated Breathing as a Mental Skills Tool During Competition</i>	66

Figures

<i>Figure 1. The Reasoned Action Approach (RAA)</i>	19
<i>Figure 2. Areas of the Reasoned Action Approach applied to the current research.</i>	24
<i>Figure 3. Participants' Intentions to Practice Regulated Breathing in a Training Routine.</i>	48

<i>Figure 4.</i> Participants' Intentions to Use Regulated Breathing as a Mental Skills Tool During Competition.....	49
<i>Figure 5.</i> Normal Q-Q plot of residuals from the t-test used to test hypothesis one.	118
<i>Figure 6.</i> Normal Q-Q plot of residuals from the one-way ANOVA model used to answer research question three.....	119
<i>Figure 7.</i> Normal Q-Q plot of residuals from the one-way ANOVA model used to answer research question four.	120
<i>Figure 8.</i> Regression standardised residuals against regression standardised predicted values for intention to practice regulated breathing in a training routine.	121
<i>Figure 9.</i> Normal P-P plot of the regression standardised residuals from the multiple linear regression model used to answer research question six.	122
<i>Figure 10.</i> Regression standardised residuals against regression standardised predicted values for intention to use regulated breathing as a mental skills tool during competition.	123
<i>Figure 11.</i> Normal P-P plot of the regression standardised residuals from the multiple linear regression model used to answer research question seven.....	124
<i>Figure 12.</i> Box plot on data used to test hypothesis one.	126
<i>Figure 13.</i> Box plot on data used to answer research question three.....	127
<i>Figure 14.</i> Box plot on data used to answer research question four.	128
<i>Figure 15.</i> Partial regression plot of instrumental attitudes against the dependent variable in the multiple linear regression model used to answer research question six.....	129
<i>Figure 16.</i> Partial regression plot of experiential attitudes against the dependent variable in the multiple linear regression model used to answer research question six.....	130
<i>Figure 17.</i> Partial regression plot of injunctive norms against the dependent variable in the multiple linear regression model used to answer research question six.....	130
<i>Figure 18.</i> Partial regression plot of descriptive norms against the dependent variable in the multiple linear regression model used to answer research question six.....	131
<i>Figure 19.</i> Partial regression plot of participants capacity against the dependent variable in the multiple linear regression model used to answer research question six.....	131

<i>Figure 20.</i> Partial regression plot of participants autonomy against the dependent variable in the multiple linear regression model used to answer research question six.	132
<i>Figure 21.</i> Partial regression plot of instrumental attitudes against the dependent variable in the multiple linear regression model used to answer research question seven.	133
<i>Figure 22.</i> Partial regression plot of experiential attitudes against the dependent variable in the multiple linear regression model used to answer research question seven.	134
<i>Figure 23.</i> Partial regression plot of injunctive norms against the dependent variable in the multiple linear regression model used to answer research question seven.	134
<i>Figure 24.</i> Partial regression plot of descriptive norms against the dependent variable in the multiple linear regression model used to answer research question seven.	135
<i>Figure 25.</i> Partial regression plot of participants capacity against the dependent variable in the multiple linear regression model used to answer research question seven.	135
<i>Figure 26.</i> Partial regression plot of participants autonomy against the dependent variable in the multiple linear regression model used to answer research question seven.	136