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Phase two exercise rehabilitation
following a cardiac event:
The effects of group and individual
exercise on psychological well-being,
physical status and quality of life

A thesis presented in partial fulfilment of the requirements

for the degree of

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Abstract

A cardiac event has serious consequences for physical and emotional health. The aim of this research was to determine the effects of a 16 week exercise-based cardiac rehabilitation programme for improving physical status, psychological well-being and quality of life. It also aimed to examine whether group based exercise with social interaction is more beneficial for improving psychological status and quality of life among people undergoing cardiac rehabilitation compared to exercising alone. A pilot study was conducted in 2009 with six participants, all of whom took part in the 16 week programme. Based on this pilot work, a number of modifications were made to the study design, assessments and questionnaires. The main study involved 11 cardiac patients who had all experienced a cardiac event, and were recruited from Wellington Hospital or through word of mouth. The study employed a randomized crossover design, with participants acting as their own controls. The 16 week period was divided into 4x4 week blocks. All participants initially completed a four week baseline condition in the Massey Cardiac Rehabilitation Clinic (standard group exercise activities). Half of the participants then completed one of two intervention conditions, either increased social interaction within group exercise, or individual exercise and minimal social interaction. Following the intervention, participants undertook the 4-week baseline again (to washout intervention effects), and then crossed over to the alternative intervention. On commencing the study and at the end of each 4-week condition, participants completed physical outcome measures (blood sugar and cholesterol levels, performance on the 10m cardiac shuttle test) as well as psychological measures (modified Hospital Anxiety and Depression Scale and SF-36 quality of life questionnaire). Data were analysed using within participant ANOVAs and pre-planned t-tests. There were few significant changes across the course of the study. Non-significant trends occurred in the predicted direction for HADS anxiety and depression and for health-related quality of life in terms of vitality, social functioning, role physical, bodily pain and general health. There was a significant reduction in total cholesterol across the course of the study, while non-significant changes occurred in the predicted direction for diastolic blood pressure (but not for systolic blood pressure or heart rate). As predicted, blood sugar levels decreased over time and improvements on the SWT approached significance ($p=.07$). Unexpectedly, HDL cholesterol significantly increased and TC/HDL cholesterol decreased across the 16 weeks. Changes in anxiety, depression, and health related quality of life across the two interventions (group/individual) were inconsistent and non-significant, although trends showed improvement in anxiety and depression after the social exercise intervention. Results are discussed in terms of small sample sizes and difficulties in conducting research with cardiac populations. Suggestions for future research are provided, including exploring patients' perceptions, previous exercise history, support and preference for individual or group-based exercise programmes.

Statement from Supervisor

Venessa Green began her Masters of Health Science (Sport and Exercise) thesis research at the beginning of 2009 in the Institute of Food, Nutrition and Human Health (IFNHH). Her primary supervisor was Dr Alan Walmsley, and I was her second supervisor (in the School of Psychology), along with Wilma Tielemans (in IFNHH). At the beginning of 2010, Dr Walmsley left Massey University and I took over the role of primary supervisor, and Dr Steve Humphries (School of Psychology) joined the supervision team to assist with statistical analyses and advice. Later in 2010 Wilma Tielemans also left Massey University.

Venessa suddenly and tragically died on June 29th, 2011, leaving everyone in much shock and grief. She had been employed in the School of Psychology in a part-time administrator role in 2011, as well as in a part-time research assistant role throughout 2010. Venessa had just begun a new position as a lecturer at Weltec, and she was very close to submitting the penultimate draft of her thesis to her supervisors. Given how close Venessa was to completing and submitting her thesis, we were all (her friends, family, colleagues and supervisors) very keen for this still to occur. She had analysed all of her results for both her pilot and main studies; written all of her draft thesis chapters which I had provided her with feedback on previously; and she had re-worked these chapters in light of feedback from both of her supervisors. However, she had not written her discussion chapter, which she was working on and planned to give to me in draft form when I returned from overseas leave in July, 2011.

This statement is to outline my contribution to Venessa's thesis. I wrote most of the abstract (modified from an earlier version which Venessa had written prior to having her results in). I also generally tidied up some sentences, paragraphs, headings, and tables, in the same manner as I would do for any other student thesis. My main contribution was to Venessa's draft discussion chapter. Venessa had 18 pages of notes for her discussion, which were primarily her ideas about why she had obtained the results she had in the main study, possibly reasons for these (mostly null) results, and what other people had found in previous research with cardiac rehabilitation patients. However only the first two these pages were written in formal language using structured paragraphs. The remaining pages were in note and bullet point form, although they did have references and ideas about which papers and findings were relevant and why. I wrote these ideas into a structured discussion with headings. Therefore, while the discussion chapter of this thesis is my own writing, all of the ideas were Venessa's, and I have

not added anything that she had not already made notes about. I used as many of her own sentences or partial sentences as I could. I did not go beyond the literature that she had mentioned in her draft notes, nor did I read these papers myself – I merely used what she had written about them in writing up this chapter.

Other people have also had input into this thesis. Dr Steve Humphries, Venessa's second supervisor, restructured some of the pilot and main chapters to ensure there was less repetitiveness across the thesis, and that the reporting of results was clear, as he does for all his supervision students. Charlotte Stephens, Venessa's close friend, was present throughout Venessa's Masters journey, and has therefore written the acknowledgments page on behalf of Venessa. Ella Kahu worked on ensuring the accuracy of the referencing and formatted the thesis to prepare it for printing and binding. My thanks to all of you for your help in enabling us to have this thesis produced and examined.

Antonia Lyons

Associate Professor in Health and Social Psychology

Acknowledgments

Venessa Green sadly passed away on 29 June 2011 following a tragic accident two months before she was due to complete and submit this Master of Health Science thesis. Venessa was a close friend of mine over the last 16 years and I know how passionate she was about rehabilitation and other's well-being. On her behalf, and on behalf of her parents, Marlene and Alan Green, and her brother Aaron and his wife Jenn, I would like to thank the following people for their support to Venessa over the last four years. We are so grateful to Massey University for allowing the completion and submission of this thesis posthumously. This has meant much to her friends and family, as we know Venessa was dedicated to completing her degree while holding down multiple part-time jobs and an active social life. To Antonia, Venessa's supervisor. Antonia, without you Venessa's thesis would not have been completed, which would have been a double tragedy. Without your wonderful mentoring and assistance especially during times of difficulty for Venessa, she would have found it that much harder to keep going. To Venessa's other supervisors at Massey, Alan Walmsley, Wilma Tielemans, and Steve Humphries, thank you for all of your input and assistance. To the students of Massey University who shared an office with Venessa and those who have assisted Antonia with completing the thesis. You helped keep Venessa sane, helped her focus, and no doubt helped her with the trickier parts of data analysis. To Anne Hare and the rest of the Scottish Harriers running club. You helped Venessa keep her life in balance and gave the friendship she needed. To the subjects of her research. Thank you for getting up so early in the morning to head to a gym. No mean feat, especially when you have cardiac issues! To all those I don't know who have helped Venessa in some way. Thank you. Venessa, I and the rest of your friends and family were all there to give you the encouragement to keep going. We are so proud that this thesis is complete and will celebrate the day you graduate for you.

Charlotte Stephens

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