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Editorial

Promoting physical activity for mental health: A complex intervention?

Initially, one may feel that promoting physical activity for mental health is fairly straightforward. In our first editorial we highlighted one current consensus statement and guideline for the use of physical activity for people with mild-moderate depression (see Taylor & Faulkner, 2008, p. 7), offered by the National Institute of Clinical Effectiveness (NICE, 2004) in the UK, namely;

> Patients of all ages with mild depression should be advised of the benefits of following a structured and supervised exercise program of typically up to 3 sessions per week of moderate duration (45 min–1 h) for between 10 and 12 weeks.

In our editorial we suggested that the message was too simplistic, perhaps driven by a belief in predominantly biological mechanisms, and may provide a barrier to practitioners and their patients. Evidence-based guidelines are, by definition, drawn from a synthesis of research that, in this case, stretches back several decades. At the time of writing, a consultation process was under way with an open invitation for comments on a revised version of the 2004 guideline which noted (NICE, 2009):

Physical activity programmes for people with persistent minor and mild to moderate depression should normally:

- be delivered individually or in structured groups (according to patient preference) with the support of a competent practitioner.
- provide an average of 3 sessions per week of moderate duration (45 min–1 h) over 10–14 weeks (average 12 weeks) tailored to the individual to maximize adherence.

Implicit in this revised statement is that there is an optimal dose. This dose could be considered substantial and may present a significant barrier to some individuals. However, there is scope for some adaptation in the words, 'according to patient preference' and 'tailored to the individual to maximize adherence.' So just how do practitioners determine what patients prefer, or how to help clients maximize adherence while identifying the key factors that mediate treatment outcomes? Also, how do researchers develop interventions that can be described in a manual, can be assessed for fidelity and are reproducible in future research, and select appropriate process measures that tap mediating factors?

Promoting physical activity to enhance mental health could be described as an example of a 'complex intervention' in at least two ways. First, there may be a number of interacting components within experimental and control interventions that could be important for the outcomes of interest to researchers. Any intervention interested in mental health is perhaps by definition complex given the nature of mental health and illness. As described in the Surgeon General's Report (United States Department of Health and Human Services [US DHHS], 1999, p.16): "Mental health and mental illness are dynamic, ever-changing phenomena. At any given moment, a person's mental status reflects the sum total of that individual's genetic inheritance and life experiences." A diverse range of factors may influence a person's mental health at any point in time, and associated attributions for how one feels, and what 'caused' a change (in onset or remission of symptoms) is equally complex (Orford et al., 2009). Indeed, part of the difficulty in identifying a single causal mechanism to explain improvements in mental health associated with physical activity may be due to the varied, complex, and individual causes of mental illness (Faulkner & Carless, 2006). Embracing an inclusive process approach which considers the broad range of biochemical, physiological and psychosocial factors that may explain a mediating role of physical activity participation underpinning mental health change, or alternatively attempting to control for, and reduce the impact of certain factors (e.g., social interaction) presents a range of challenging methodological and practical problems for researchers and interventionists.

Second, the 'active ingredient' of physical activity interventions, physical activity, is itself a demanding, complex behavior often with poor adherence rates. Individually-adapted health behavior change programs, most commonly used within physical activity and mental health interventions, can increase physical activity but "require careful planning and coordination, well-trained staff members, and resources sufficient to carry out the program as planned" (Kahn et al., 2002, p.86). Additionally, physical activity increases may be only short-term – which presumably has implications for the sustainability of changes in the primary outcome(s) of mental health. Helping individuals get active, and maintain physical activity, again presents both methodological and practical challenges for researchers and interventionists. Such challenges may be heightened in working with special populations. Given the often complete absence of motivation in individuals with depression or schizophrenia for example, the consideration of exercise might even appear puzzling to some (Salmon, 1990)!

In 2000, the Medical Research Council (MRC) published a framework to help researchers recognise and adopt appropriate methods for evaluating complex interventions (see Campbell et al., 2000). This has now been recently revised and updated by the MRC (MRC, 2008; www.mrc.ac.uk/complexinterventionsguidance) and may provide a useful framework for MENPA readers who are developing interventions to promote mental health through physical activity. Where appropriate, it may also be useful for

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authors to locate their work within the four stages of intervention development from (1) development, (2) feasibility/piloting, (3) evaluation to (4) implementation. The use of such a framework may help in systematically addressing gaps in the literature in terms of how interventions are designed and reported, and assist the integration of theory into practice. The framework also provides a basis for reflecting on the progress and future directions of MENPA as we start our second volume.

1. Development

The first stage of *development* is needed to ensure that an intervention is likely to have a meaningful effect. Identifying an evidence base through systematic reviews will be the first step for many. As indicative of the evidence-based movement, the Cochrane Collaboration (www.cochrane.org) was founded in 1993 to produce and disseminate systematic reviews of randomized controlled trials of healthcare interventions. These reviews have already contributed to many important improvements in healthcare and are widely used in treatment guidelines and health policy documents. Abstracts of reviews can be accessed from the Cochrane Library at (http://www.mrw.interscience.wiley.com/cochrane/).

Given difficulty for some in accessing these reviews, we will be introducing a "Cochrane Corner" to the final issue of each volume where we will print a brief report drawing attention to one or two recent Cochrane Library reviews relevant to physical activity and mental health with a summary of findings, and implications for practice and research. The interested reader will be guided to the full reviews, and we also hope this increases interest in the many other reviews provided by The Cochrane Library. Cochrane authors are also welcome to contact the editors with suggestions for reviews to include. Cochrane reviews are still heavily reliant on the synthesis of randomized controlled trials and we note the need for considering a broader range of evidence sources in knowledge syntheses (Faulkner, Taylor, Ferrence, Urban, & Selby, 2006) and MENPA will continue to publish other types of reviews that are based on structured and transparent protocols (e.g., see Azar, Ball, Salmon, & Cleland, 2008).

Developing a theoretical understanding of the potential processes of change is fundamental. A number of submissions have been informative in exploring the mechanisms (e.g., Foley et al., 2008; White, Kendrick & Yardley, 2009) that may explain the effects of physical activity. In this volume, we also have two invited commentaries. The first introduces the perspectives that animal research may provide in understanding the relationship between physical activity and mental health (Remington, 2009). A second commentary critically assesses the application of neuroscience techniques to this relationship (Dishman & O'Connor, 2009), and we suspect that significant progress in our field of study will be made through such future applications.

As discussed, understanding how participants are successfully engaged in physical activity is an essential component of intervention work. However, our sense is that discussion of this 'how' is rarely included in the published literature perhaps due to word limitations. As outlined in our first editorial, as a way of fostering the development of intervention research we remain interested in publishing high quality papers that describe the research design, methods and intervention of rigorous trials designed to examine the effects of physical activity on mental health.

2. Feasibility/Piloting

The *feasibility and piloting* stage includes testing procedures for feasibility and acceptability, and understanding recruitment and retention of participants. Several submissions have been informative in this light (e.g., Kerr et al., 2008; Marzolini, Jensen, & Melville, 2009). We are committed to publishing pilot studies when the authors also turn the focus of their report on what they, and other researchers and interventionists, can learn from their experience. In particular, information on what worked and what didn't work in terms of recruitment, and estimating appropriate sample size calculations for future studies, can help research progress to more rigorous evaluation. Qualitative studies that help advance our understanding of how best to develop and deliver interventions will also be valuable.

3. Evaluation

The *evaluation* of a complex intervention can take many forms. In this issue, we publish an example of a strong RCT evaluating a secondary outcome (sexual functioning) of an exercise intervention for depression (Hoffman et al., 2009). We particularly value the MRC guidance on evaluation of complex interventions by its unambiguous clarification that there are indeed variations on the RCT approach that may be more appropriate in certain circumstances. For example, N-of-1 designs may be relevant where sample sizes are potentially small and when within-person variability in response to interventions is of interest. Although randomisation is strongly encouraged, other non-experimental designs may also be appropriate given adequate justification by study authors. Studies reporting process evaluations shedding light on why interventions work or fail, and economic evaluations are essential and the absence of such submissions to MENPA is notable.

4. Implementation

The final stage in evaluating complex interventions involves *implementation* in terms of getting evidence into practice. In many respects, the current body of evidence may not yet be of sufficient quality or quantity for its integration into routine practice or policy. We see MENPA continuing to offer an outlet for researchers in considering the link between evidence accumulation, dissemination and influencing professional practice and policy. And irrespective of the evidence, practice continues to move forward. In the future, we look forward to reporting on initiatives like 'Minding Our Bodies' in Ontario, Canada (http://www.mindingourbodies.ca/). Initiated by the Canadian Mental Health Association, this is a two-year project (2008–2010) with the objective of creating a provincial mental health promotion program serving as an "incubator" to help mental health service providers in Ontario develop and deliver evidence-based physical activity programs in their local communities. To suggest such an undertaking will be complex is an understatement.

The MRC guidance on developing and evaluating complex interventions is not without some criticism (e.g., see Anderson, 2008) which we appreciate. We recommend the MRC resource to readers as an informative road map for systematically examining the relationship between physical activity and mental health but it is not the only map. The steps in translational research are also highlighted in the Strategic Objectives of the National Institute of Mental Health (NIMH) in the USA (see http://www.nimh.nih.gov/about/strategic-planning-reports/index.shtml):

Objective 1: Promote discovery in the brain and behavioral sciences to fuel research on the causes of mental disorders.

Objective 2: Chart mental illness trajectories to determine when, where, and how to intervene.

Objective 3: Develop new and better interventions that incorporate the diverse needs and circumstances of people with mental illnesses.

Objective 4: Strengthen the public health impact of NIMH-supported research.

In particular, the NIMH state: "…we must adopt innovative approaches to develop personalized preventive and therapeutic approaches for those in need" with the following suggestions:

- Promote new psychosocial and biomedical intervention trials that focus on the moderators and predictors (e.g., biological, genetic, behavioral, experiential, environmental) of intervention response and side effects in different patient populations. This will be done throughout the disease course.
- Follow exploratory trials with prospective trials to determine if using predictors enhances recovery.
- Use research on the biological causes of disorder to inform and develop psychosocial and biomedical interventions that target core features of disease, assess outcomes appropriate to the course of illness under study, and develop study designs that have impact on these features.
- Develop new technologies (e.g., software for enhancing or building cognitive skills, small molecules for molecular targets to develop medications) that can advance the development of new interventions.
- Design more innovative and comprehensive intervention studies by building on existing data from administrative records, epidemiological studies, and previous clinical research.
- Accelerate research that maximizes the ability of current treatments to reduce symptoms, improve adherence and functioning. Ensure that this research also accounts for cultural/ethnic diversity.

MENPA is committed to publishing work that spans the entire spectrum from conceptualization to implementation, and from basic and pre-clinical to applied research. In these early years of the journal, our priority is to establish a readership that is not restricted to the exercise science community given where Elsevier have positioned MENPA in their field of Clinical Psychology journals. Consequently, we have declined to review some strong submissions many of which have examined the acute benefits of exercise in non-clinical populations. Potential contributors to MENPA are always welcome to contact the editors to discuss the suitability of a manuscript before making a formal submission.

Finally, we are extremely grateful for the timely and conscientious work of our reviewers in helping with the production of volume one and we acknowledge their contribution on page 53. As editors, we have been excited to get MENPA off the ground, and we look forward to continuing the journey.

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