People with mental illness who are engaged on a recovery pathway, are positively encouraged by health services to increase their levels of physical activity. Yet, poor engagement in physical activity amongst this population is high. Patients cite issues associated with poor motivation, lack of self-efficacy and the effects of medication (Roberts & Bailey, 2015; Ashford et al., 2010; Johnstone et al., 2009) in explaining their non-engagement. Promotion of physical activity, provides challenges for clinical staff providing care for people with chronic mental health issues.

Motivational Interviewing (MI) is currently advocated by the NHS to help patients make decisions, such as treatment related choices or pain management. MI seeks to identify an individuals’ readiness to change behaviours based on their language used during discussions about the problems at hand (Miller & Rollnick, 2013).

Whilst MI may encourage initial motivation, it does not often address the underlying reasons for avoidant behaviours or contextual issues that trigger behaviours (Bricker & Tilsinn, 2011; Armstrong et al. 2011). Patients may revert to previous avoidant behaviour patterns once the situational context has changed (Biglan & Hayes 1996). Lapping into negative coping or avoidant strategies in this way promotes anxiety, which in turn promotes further avoidant behaviours (Hayes, Strosahl & Wilson, 2012).

Acceptance and Commitment Therapy (ACT) is an empirically informed intervention based in Relational Frame Theory (RFT). Comparable with psychological therapies such as Cognitive Behavioural and Dialectic Behaviour Therapies (CBT, DBT), it forms one of the newer "third wave" approaches to psychological therapy (Hayes, 2004). ACT has similarities with, but is less directive than, MI (Bricker & Tilsinn, 2011).

In ACT, commitment to behavioural change is achieved using techniques such as mindfulness to allow individuals to notice and accept patterns of behaviour and introduce strategies to enabling them to apply their own understanding to contextual cues. This enables them to realise the possibility of long term behavioural change based on their own values and experiences (Hayes, Strosahl & Wilson, 2011).

There is a growing evidence base of successful long-term outcomes resulting from ACT-based interventions (González-Menédez et al., 2014; Bach, Hayes & Gallop, 2012). Furthermore, the idea that Acceptance and Commitment techniques can act as a mediator in behavioural change and can, therefore, be used to coach people in adopting positive lifestyle change is also gaining momentum (Wicksell et al., 2011).

The aim of this review is to systematically evaluate the effectiveness of Acceptance and Commitment based approaches in promoting engagement with physical activity. Scoping searches have revealed only a small amount of literature in this area, and so we will not restrict the review to any particular client group.

### Method

#### Search Methods:
An evidence synthesis will be conducted focusing on research which reports the use of Acceptance and Commitment based approaches to promoting physical activity. This will include research in the general population, or those with currently diagnosed physical or mental health illness. Search databases will include PsycINFO, MEDLINE, Psychology & Behavioural Sciences Collection, Cochrane Library, and the Association for Contextual Behavioral Science (ACBS) publications database. The search will be limited to literature subject to peer reviewed English language publication between January 1987 (the first mention of ACT in the literature) and Jan 2015.

#### Selection criteria:
Studies should report an empirical investigation of the use of Acceptance and Commitment based approaches as an intervention to promote exercise based physical activity in any population. There is a growing trend in the ACT literature that suggests where interventions are delivered to non-clinical populations, a less therapeutic version of the intervention is used; this is sometimes referred to as Acceptance and Commitment Training or Coaching. This review will be inclusive to all variations of ACT-based delivery. Level of physical activity may be reported as direct or indirect outcome of engagement with the ACT Intervention.

#### Data collection and analysis:
Following standard guidelines for conducting systematic reviews, a strict protocol will be adhered to. Screening and inclusion assessment will be undertaken by two independent reviewers and systematic data extraction will be verified through a process of independent checks. Findings will be assessed to ascertain the degree of methodological quality of their data extraction and verification process.

### Results

Extracted data will be reported by tabulation of results in adherence with the Methodological Expectations of Cochrane Intervention Reviews (MECIR) mandatory reporting requirements. If appropriate statistical aggregation of the findings is not possible due to a paucity of research, a narrative approach will be taken to the interpretation of data.

All data synthesis undertaken will be in accordance with the general framework outlined in the Environmental and Social Research Council (ESRC) Guidance on the Conduct of Narrative Synthesis in Systematic Reviews.

### Why it is important to do this review?

There is increasing evidence to suggest that Acceptance and Commitment based approaches may be an effective method of encouraging long-term lifestyle changes, particularly in situations where high levels of experiential avoidance are experienced. However, these approaches are not commonly provided for the NHS in the encouragement of physical activity. By systematically identifying literature on this topic, an objective and unbiased assessment of the current evidence and potential for these interventions can be made.

### Future work

This systematic review is the first study of a PhD thesis and will inform the nature of the empirical work that will follow. It is likely that the thesis will take a mixed methods approach to developing and testing Acceptance and Commitment based intervention to promote physical activity, focusing specifically on populations with enduring mental health problems. The final stage of the PhD will likely be a feasibility randomised controlled trial. Taken as a whole, the work will address the following research questions:

- When is the best time to encourage increased physical activity for people with mental illness?
- Are ACT based interventions for physical activity more effective for particular populations suffering with mental illness e.g younger people / adult / gender?
- How are ACT based techniques for physical activity best delivered?
- What are the commonly held personal values amongst people with mental illness with regard to physical activity?
- Can ACT based techniques be used as a method of coaching, to encourage people with mental health problems to engage in greater levels of physical activity?

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