

**Supplement 1: Table Showing Review of Research Studies Relevant to Mindfulness and Medical Students**

Author	Year	n=	Description	Findings	Strengths	Limitations
Shapiro et al University of Arizona (United States)  (Shapiro, Schwartz and Bonner, 1998)	1998	73 Students	<ul style="list-style-type: none"> <li>- Randomised Controlled Trial (RCT)</li> <li>- Waitlist control</li> <li>- Intervention = MBI</li> <li>- Volunteer samples (elective)</li> </ul>	<ul style="list-style-type: none"> <li>- Reduction in anxiety, depression</li> <li>- Increase in empathy</li> <li>- At 8 weeks</li> </ul>	<ul style="list-style-type: none"> <li>- RCT</li> <li>- Validated questionnaires</li> <li>- Use of MBI</li> </ul>	<ul style="list-style-type: none"> <li>- Lack of long term data</li> <li>- Self-selecting nature of group</li> <li>- Lack of comparisons with different interventions</li> <li>- Age of study</li> </ul>
Hassed et al Monash University (Australia)  (Hassed, de Lisle, Sullivan and Pier, 2009)	2009	148 students	<ul style="list-style-type: none"> <li>- Pre-post test</li> <li>- 2006 cohort</li> <li>- 1<sup>st</sup> years students</li> <li>- Intervention = Health Enhancement Programme (HEP) (required, assessed)</li> </ul>	<ul style="list-style-type: none"> <li>- Suggest that HEP improves student wellbeing even during exam periods</li> <li>- At 6 weeks</li> </ul>	<ul style="list-style-type: none"> <li>- validated questionnaires</li> <li>- the use of an established intervention (since 2002)</li> </ul>	<ul style="list-style-type: none"> <li>- absence of control</li> <li>- short length of follow up (6 weeks)</li> <li>- self-report data</li> <li>- possible confounding factors (e.g. curriculum structure, delivery, and adjustment to university life)</li> <li>- multifaceted intervention (precludes further interpretation as to which specific components confer benefit)</li> </ul>
Warnecke et al University of Tasmania  (Warnecke et al., 2011)	2011	66 Students	<ul style="list-style-type: none"> <li>- RCT</li> <li>- Single blinded</li> <li>- Intervention= 8-week intervention of CD guided MT</li> <li>- Self-directed</li> <li>- No group work</li> <li>- (elective)</li> </ul>	<ul style="list-style-type: none"> <li>- Reduction in perceived stress &amp; anxiety</li> <li>- At 16 weeks</li> </ul>	<ul style="list-style-type: none"> <li>- Use of alternative delivery</li> <li>- Acceptance of students with a variety of baseline scores</li> </ul>	<ul style="list-style-type: none"> <li>- Small sample size</li> <li>- Short follow up</li> <li>- -not blind</li> </ul>

Dyrbye et al Rochester University (United States)  (Dyrbye et al., 2017)	2017	95 Students	<ul style="list-style-type: none"> <li>- Pre-post</li> <li>- 2015 &amp; 2015</li> <li>- 2 cohorts of 1<sup>st</sup> students</li> <li>- Intervention= 'Stress Management and Resilience Training (SMART) Program (required, assessed)</li> </ul>	<ul style="list-style-type: none"> <li>- No measurable improvements in wellbeing or empathy</li> </ul>	<ul style="list-style-type: none"> <li>- use of validated questionnaires</li> <li>- 2 cohorts</li> </ul>	<ul style="list-style-type: none"> <li>- no control group</li> <li>- no long-term data and the self-reporting of data</li> <li>- educational outcomes were not measured.</li> </ul>
Fernando et al University of Auckland (New Zealand)  (Fernando, Skinner and Considine, 2017)	2017	83 Students	<ul style="list-style-type: none"> <li>- Laboratory study</li> <li>- RCT</li> <li>- Experimental manipulation</li> <li>- Intervention= 10-minute mindfulness recording</li> <li>- Control= civic service speech</li> <li>- Prior to patient vignette tasks</li> <li>- (elective)</li> </ul>	<ul style="list-style-type: none"> <li>- Intervention could enhance decentring</li> <li>- Effects of compassion to others moderated by pre-existing levels of self-compassion</li> </ul>	<ul style="list-style-type: none"> <li>- A study looking at compassion in medical students</li> <li>- RCT</li> </ul>	<ul style="list-style-type: none"> <li>- Brief nature of recording</li> <li>- Self-report data</li> <li>- Lack of real patient simulation</li> </ul>
van Dijk et al (Netherlands)  (van Dijk et al., 2017)	2017	167	<ul style="list-style-type: none"> <li>- RCT</li> <li>- Using students in clinical years</li> <li>- 20 Month follow up</li> </ul>	<ul style="list-style-type: none"> <li>- Small reduction in distress</li> <li>- Moderate increase in positive</li> </ul>	<ul style="list-style-type: none"> <li>- Use of clinical sample (1<sup>st</sup> MT medical study to do so)</li> </ul>	<ul style="list-style-type: none"> <li>- Lack of active control</li> <li>- Trial not blind</li> <li>- Possible contamination effects</li> <li>- No physiological outcome data</li> </ul>

			<ul style="list-style-type: none"> <li>- Intervention= MBSR</li> <li>- Control= curriculum as usual (elective)</li> </ul>	<p>mental health, life satisfaction and mindfulness</p> <ul style="list-style-type: none"> <li>- No difference in empathy</li> </ul>		
de Vibe et al (Norway)  (de Vibe <i>et al.</i> , 2018)	2018	288	<ul style="list-style-type: none"> <li>- RCT</li> <li>- Multicentre</li> <li>- 6 year follow up of MBI</li> <li>- Intervention = MBI</li> <li>- Control= curriculum (elective)</li> </ul>	<ul style="list-style-type: none"> <li>- Positive effect of MT on coping and wellbeing</li> <li>- Amount of formal practice did not predict 6-year outcomes</li> </ul>	<ul style="list-style-type: none"> <li>- Vigorous RCT design</li> <li>- Anonymous reporting</li> <li>- Long follow up</li> </ul>	<ul style="list-style-type: none"> <li>- Possible contamination effects</li> <li>- Trial not blind</li> <li>- Lack of active control</li> <li>- Self-report (risk of bias)</li> <li>- No physiological outcome data</li> </ul>
Mangione et al (United States)  (Mangione <i>et al.</i> , 2018)	2018	739 Students	<ul style="list-style-type: none"> <li>- Multi-institutional online questionnaire</li> <li>- Measured variables 'active' and 'passive' engagement with humanities</li> <li>- (elective)</li> </ul>	<ul style="list-style-type: none"> <li>- Qualities correlating most strongly with exposure: <ul style="list-style-type: none"> <li>▪ <i>Tolerance of ambiguity</i></li> <li>▪ <i>Emotional</i></li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>- number of students</li> <li>- multiple locations</li> </ul>	<ul style="list-style-type: none"> <li>- recall and reporting bias</li> <li>- observational nature of study (only identifies correlations and not causation)</li> </ul>

				<p><i>intelligence</i></p> <ul style="list-style-type: none"> <li>- <i>burnout</i></li> </ul>		
Daya and Hearn, 2018 (Systematic Review) (International) (Daya and Hearn, 2017)	2018	12 studies  <i>Published Between 1996-2016</i>	<ul style="list-style-type: none"> <li>- Systematic Review</li> <li>- RCT, non RCT and pre-post trials</li> <li>- Quality: <ul style="list-style-type: none"> <li>2 = 'strong'</li> <li>6 = 'moderate'</li> <li>4 = 'weak'</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>- mixed evidence for the use of MBIs to manage and prevent stress and depression</li> </ul>	<ul style="list-style-type: none"> <li>- use of quality assessment tool</li> <li>- strict inclusion and exclusion criteria</li> <li>- all studies reviewed by both authors</li> </ul>	<ul style="list-style-type: none"> <li>- methodological weakness in studies (may preclude generalisation)</li> <li>- only 2 = strong</li> <li>- only quantitative studies</li> <li>- only 3 measured mindfulness</li> <li>- different validated measures to assess depression and stress</li> <li>- predominantly female sample</li> </ul>