

The impact of mindfulness meditation training and practice on post-graduate coaching students

Article

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The impact of mindfulness meditation training and practice on post-graduate coaching students

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Abstract

This study aims to examine the insights and development of post-graduate trainee-coaches engaged in mindfulness meditation training and how mindfulness meditation contributed to their development and performance. **Methods:** Data were gathered from 67 trainee-coaches who undertook a 10-week program. The Five Facet Mindfulness Questionnaire (FFMQ) measured pre- and post-training results. Opinions of the training and a daily diary log system to track the time each spent in mindfulness meditation practice were used to capture the impact of the training and each trainee's contribution to the development of their own mindfulness. Ten hypotheses were proposed. **Results:** An increase in mindfulness in trainee-coaches was found for the majority (85 per cent) after the practice sessions. A large majority (78 per cent) were positive about the training and practice and had found it beneficial. Those with higher levels of mindfulness, and those whose mindfulness had improved, tended to have more favourable opinions of mindfulness, showing positive effects of practice in contrast to

those with lower mindfulness. These and a positive relationship between increases in mindfulness during training and the days available spent practising mindfulness are the important findings. Three hypotheses were supported. These indicated higher FFMQ scores in the students' mindfulness meditation after the training; relationships between trainees' FFMQ pre- and post-test scores and available days spent practicing; and opinion of their mindfulness meditation practice and the days available spent practicing. Two other hypotheses were partially supported: Relationships between FFMQ pre- and post-scores and trainees' opinions about their mindfulness meditation practice; and between FFMQ post- and pre-scores and trainee academic achievement on the academic module in which mindfulness meditation was taught and practised. Academic performance was less directly related to mindfulness meditation training and practice and there were no significant differences between males and females on measures relating to the training and practice. **Discussion:** Findings on increases in mindfulness, opinions of mindfulness practice and academic performance are explained or generally supported by the literature. Practical applications, limitations and further research are also covered. The importance of training is presented in terms of the development of insights and the mindfulness skills of attention, presence, empathy, self-regulation and non-judgement, the impact of which are fundamental in mindfulness coaching.

Conclusion: Mindfulness meditation training of trainee-coaches complements and aids the development of professional and personal skills. The training offers opportunities for greater interpersonal insights, and the use of mindfulness meditation in coaching practice.

Keywords: Mindfulness meditation training; Practice; Coaching; Five Facet Mindfulness Questionnaire, Diary logs; Academic performance.

Introduction

The literature covers studies concerning university training programs based on mindfulness practice in coaching (Cavanagh & Spence, 2013; Collard & Walsh, 2008; Deiorio et al., 2016; Kemp, 2016; Lech et al., 2018; Passmore & Marianetti, 2007; Virgili, 2013). However, Good et al. (2016, p. 135) report there has been little attempt to consider 'the active ingredients' of mindfulness training programs and, according to de Bruin et al. (2015), few studies have been conducted on mindfulness in higher education.

Why is mindfulness training relevant to coaches

This study aims to examine the insights and development of post-graduate trainee-coaches engaged in mindfulness meditation training and how it contributed to their development and performance in practice. Mindfulness training is regarded to be helpful and relevant for coaches in preparing them for coaching sessions, maintaining focus and staying emotionally detached therein, and in teaching mindfulness to their clients (Passmore & Marianetti, 2007). These authors considered the teaching of it would include areas such as concentration, awareness and acceptance, which are also supported by various definitions of mindfulness (Van Den Assam & Passmore, 2022). Furthermore, suggestions to integrate mindfulness and coaching for practising coaches has also been proposed (Virgili, 2013; Kemp, 2016) as has the integration of mindfulness training and health coaching (Spence et al., 2008). These integrations are considered achievable through the use of interpretive qualities such as presence, attentiveness and openness, and training, to develop other skills such as attention, empathy, self regulation and non-judgement, which are relevant to the quality of coaching relationship (Virgili, 2013).

The Five Facets Mindfulness Questionnaire (FFMQ), which is used in this study to measure the impact of the mindfulness training and practice, is based on these concepts as well, e.g. awareness, noticing, non-judging, non reactivity (Baer et al.,

2008), as is the International Coaching Federation (ICF) core competence Maintaining Presence. Specifically, the emphasis of this ICF competency is on coaches being focused, regulating their emotions, creating space for clients and the ability to cultivate learning and growth, in terms of awareness, insight or learning with respect to their worldview and behaviours. (International Coaching Federation (ICF), 2019). In addition, Cox's (2013) conceptualization of the coaching process which includes an emphasis on the present and presence provides additional support to this ICF competency, as does the author's preliminary findings with respect to presence as the enabler of the present in a mindfulness and coaching supervision context (Van Den Assam, Passmore & Dulewicz, 2022).

The present study follows through on Virgili's (2013) work noted above and describes what the active ingredients of mindfulness training and practice are for coach trainees and to demonstrate a case for the integration of these for mindfulness coaching practice (Kemp, 2016).

Definitions of mindfulness and mindfulness meditation

The definitions described below are supportive of, and compatible with the facets of the Five Facet Mindfulness Questionnaire (FFMQ), which is the main instrument used to gather data for this study. Baer et al. (2004, p.9) note that mindfulness 'is generally defined to include focusing one's attention in a nonjudgmental or accepting way on the experience occurring in the present moment'. Brown et al. (2003, pp.822–848) defined mindfulness as 'an enhanced attention to an awareness of current experience or present reality'. These definitions support Hölzel et al's. (2011, p.538) position on mindfulness meditation, which 'encompasses focusing attention on the experience of thoughts, emotions, and body sensations, simply observing them as they arise and pass away', which also describe aspects of the facets of the FFMQ.

Mindfulness meditation training has been shown to enhance present moment awareness by teaching participants to notice distractions and repeatedly bring attention

back to the object of meditation. This may increase awareness of ongoing cognitive states, which improve attention, reduce mind wandering and improve cognitive tasks and mindfulness (Zeidan et al., 2010). Although various exercises are prescribed during this mindfulness meditation training, no specific goals are set. Participants only observe whatever is happening in the moment without judgement (Baer, 2003). Those who have completed mindfulness training indicated improvements in mindfulness, depressive symptoms, rumination, memory and sustained attention (Chambers et al., 2008).

Impact of mindfulness meditation training and practice

Good et al. (2016), Tang et al. (2015) and Zeidan et al. (2010) report that the effectiveness of minimum mindfulness training may occur after only a matter of minutes, brain changes in three hours and structural brain changes in 11 hours of training. Brief mindfulness meditation and training has been reported to significantly effect cognitive tasks that require sustained attention and executive processing efficiency, reduce fatigue, anxiety and improved mindfulness, higher-order executive processes, visuo-spatial processing and verbal fluency (Zeidan et al., 2010), and students' retention of information from lectures (Ramsburg & Youmans, 2014). It has been reported that a 10-minute-per-day fully automated mindful awareness training program improved grades in reading and science (Bakosh et al., 2016). However, an important qualifier to these effects would appear to be with respect to when the meditation practice occurs. According to Chan & Woollacott (2007) and Soler et al. (2014), these effects appear related to frequent or regular rather than irregular or infrequent mediation.

Finally, both Manuel et al. (2017) and Soler et al. (2014) suggest that objective indices such as frequency and duration of meditation practice may be useful in assessing practice and that further research consider these in terms of practice outcomes.

Academic performance and mindfulness meditation training and practice

Although some studies revealed a significant direct relationship between mindfulness and academic performance, others did not (Caballero et al., 2019; Chiang & Sumell, 2019; Miralles-Armenteros et al., 2019; Lin & Mai, 2018; Teodorczuk, 2013). As a result, the relationship between academic performance and mindfulness does not appear to be a direct one.

Bennett et al. (2018) suggest that mindfulness improves academic performance because it 'is purely a product of (i) cognitive enhancement (i.e. working memory, information recall and attention) and (ii) personality and individual differences (such as resiliency and mindfulness)'. Lin & Mai (2018, p.373) report 'mindfulness meditation intervention can help in-class learning' and 'significantly improves short-term academic performance but does not significantly improve long-term academic performance'.

However, Zeidan et al's. (2010), McConville, et al's. (2017) and Boo et al's. (2019) studies have noted that various processes underpin the effect of mindfulness on academic performance. These include coping with stress, enhancing self-awareness, attention, thinking, feelings and behaviours and reducing distressing thoughts and rumination. Miralles-Armenteros et al. (2019) note that these relationships are not direct but with mindfulness may facilitate students' compassion, which may in turn improve feelings of closeness, connectedness, trust and support, which consequently can lead to increased levels of engagement and academic performance.

Objectives of the study

The purpose is to examine the insights and development of trainee-coaches engaged in a post graduate mindfulness meditation training program. The literature, in particular Good et al. (2016) and de Bruin (2015), helped to focus the need for this study and shape its three research questions: (i) What is the impact of mindfulness meditation

training on post graduate trainee-coaches in terms of practising mindfulness meditation; (ii) How does the training effect their opinions of the practice of mindfulness meditation; and (iii) How does their training impact on the academic marks they received for the module. These questions in turn served to frame four areas of focus to guide our research and develop ten related hypotheses: (i) the impact of a mindfulness meditation training program on trainee-coaches (Hypothesis 1), (ii) their opinion of the training (H 2,3,4), (iii) the time they spent practising mindfulness meditation during their training (H 5,6), and (iv) their academic performance (Marks achieved) related to their training (H 7,8, 9,10).

Hypotheses

‘...if there was a strong theoretical basis for the research, then the researcher may derive hypotheses and empirical generalizations and begin to collect evidence in a structured way for the purposes of formal testing’ (Remenyi et al., 1998, p.142).

The rationale for the development of the hypotheses was based on major areas of interest and connections between these as identified in the literature above with respect to the training and practice of mind-fulness. One of these areas selected for this research was to identify and understand the *active ingredients of the mindfulness training and practice program*. It included concepts such as the awareness, the present, attention, non-judgement, which were reflected in published work and definitions of mind-fulness (Baer, 2003; Baer, et al., 2004; Brown et al., 2003; Hölzel et al., 2011; Zeidan et al., 2010). Contributions with respect to the *impact of the training and its effectiveness*, the second area of focus of the hypotheses was provided by several additional sources (Good et al., 2016; Tang et al., 2015; Zeidan et al., 2010; Ramsburg & Youmans, 2014; Bakosh et al., 2016; Chan & Woollacott, 2007; Soler et al., 2014; Manuel et al., 2017). Finally, contributions with respect to the *impact of mindfulness on academic performance* were offered by a number of sources (Caballero et al., 2019; Chiang & Sumell, 2019; Miralles-Armenteros et al., 2019; Lin & Mai, 2018; Teodorczuk, 2013; Bennett et al., 2018; Lin & Mai, Zeidan et al., 2010; McConville, these contributions from the literature, the hypotheses were formulated and expanded to

reflect additional related interests and themes from the literature above, and are presented with the related cited literature against each one below.

H1. The majority of the students will have a higher post-module than pre-module FFMQ score. (Baer et al., 2006, p.36, 2008, p. 329; Zeidan et al., 2010, p.603; Chambers et al., 2008, p.303).

H2. There is a significant positive relationship between FFMQ scores and opinion of practice (Baer et al., 2006, p. 36, 2008, p.329; Good et al., 2016; Tang et al., 2010; Zeidan et al., 2010, p.597)

H3. There is a significant positive relationship between time (minutes per day) spent practising mindfulness and opinion of practice. (Manuel et al., 2017, pp.1,5; Soler et al., 2014, p.5; Chan & Woollacott, 2007, p.656).

H4. There is a significant positive relationship between days (per cent of total available) spent practising mindfulness and opinion of practice. (Manuel et al., 2017, pp.1,5; Soler et al., 2014, p.5; Chan & Woollacott, 2007, p.656).

H5. There is a significant positive relationship between FFMQ scores and time (minutes per day) spent practising mindfulness. (Manuel et al., 2017, pp.1,5; Soler et al., 2014, p.5; Chan & Woollacott, 2007, p.656).

H6. There is a significant positive relationship between FFMQ scores and the days (per cent of total available) spent practising mindfulness. (Manuel et al., 2017, pp.1,5; Soler et al., 2014, p.5; Chan & Woollacott, 2007, p.656).

H7. There is a significant positive relationship between FFMQ scores and academic achievement. (Zeiden et al., 2010, pp.597, 602, 603; Miralles-Armenteros et al., 2019, pp.7,8; Lin & Mai, 2018, p.373; Chiang & Sumell, 2019; Boo et al., 2019, p.288; Teodorczuk (2013, p.ii).

H8 There is a significant positive relationship between time (minutes per day) spent practising mindfulness and academic achievement. (Manuel et al., 2017, pp.1,5; Soler et al., 2014, p.5; Chan & Woollacott, 2007, p.656).

H9. There is a significant positive relationship between days (per cent of total available) spent practising mindfulness and academic achievement. (Manuel et al., 2017, pp.1,5; Soler et al., 2014, p.5; Chan & Woollacott, 2007, p.656)

H10. There is a significant positive relationship between opinion of mindfulness meditation practice and academic achievement. (Miralles-Armenteros et al., 2019, pp.7,8; Lin & Mai, 2018, p.373; Chiang & Sumell, 2019; Boo et al., 2019, p.288).

Method

Participants

The research was conducted with post graduate trainee-coaches who attended a module on neuroscience and psychology within a post-graduate coaching programme in a UK business school, in which they engaged in the training and practice of mindfulness meditation. The total number of these trainee coaches who commenced training was 107, 67 of whom completed all the requisite forms; 35 in 2019, 10 in 2020 and 22 in 2021. The disruption caused by Covid-19 had reduced the number available in 2020 and 2021. The average age of the sample was 48.5 years with a standard deviation of 6.6. The gender ratio was 61 per cent female and 39 per cent male.

Procedure

Three cohorts participated, spread over three years (2019, 2020 and 2021, each over a ten-week period). They took part in a four-hour class session on the first day of the training on the theory and practice of mindfulness. This was conducted by two senior

trainers skilled in the practice and theory of mindfulness coaching from the academic and practitioner communities. This class session was followed by a 15-minute guided practice during the second and third days of that week. During the second week of class the following month, each of the first three days were devoted to 15 minutes of guided practice, totalling 45 minutes. In the last month of class, the first four days were each given to 15 minutes of guided practice, for a total of one hour.

In addition to the class sessions, trainee-coaches continued to practise mindfulness meditation at home and maintained their personal daily diary logs recording the time in minutes practised on a daily basis for the duration of the training. During this time they were also contacted individually by the researchers and program staff to remind them of the benefit of recording their mindfulness exercises in their logs soon after they completed these. At the final workshop of each cohort the second FFMQ form was administered and later collected along with the daily diary logs.

Measures and data collection

The data sources used included pre- and post-training scores from the Five Facet Mindfulness Questionnaire (FFMQ), trainee-coaches' opinions about their training and practice of mindfulness meditation, daily diary logs of their personal mindfulness meditation practice at home, as well as the students' age, gender and academic achievement, i.e. Marks obtained on the neuroscience and psychology module in which the mindfulness meditation training occurred.

Five Facet Mindfulness Questionnaire

Since the Five Facet Mindfulness Questionnaire (FFMQ) provides a comprehensive source to measure mindfulness (Bergomi et al., 2013; de Bruin et al., 2012; Gherardi-Donato et al., 2020; Sauer et al., 2013) and examines 'a greater range of the facets of mindfulness than others' (Baer et al., 2006, p.36), it was specifically selected to measure the impact of mindfulness meditation training. 'Meditation is significantly and positively correlated with four of the FFMQ mindfulness facets (all but acting with awareness)'...and 'most mindfulness facets were significantly related to meditation experience and to psychological symptoms and wellbeing' (Baer et al., 2008, pp.329, 336). Participants completed the long version (39 questions) of FFMQ before (pre) their mindfulness training and practice commenced and as well as a second FFMQ long version after (post) upon its completion.

In an attempt to operationalize mindfulness FFMQ integrates a number of different instruments and produces a five-factor (facet) solution:

'Observing includes noticing or attending to internal and external experiences, such as sensations, cognitions, emotions, sights, sounds, and smells.

Describing refers to labelling internal experiences with words.

Acting with awareness includes attending to one's activities of the moment and can be contrasted with behaving mechanically while attention is focused elsewhere (often called automatic pilot).

Non-judging of inner experience refers to taking a non-evaluative stance toward thoughts and feelings.

Non-reactivity to inner experience is the tendency to allow thoughts and feelings

to come and go, without getting caught up in or carried away by them' (Baer et al., 2008, p.330).

FFMQ pre- and post-meditation training measures provide the data to test Hypothesis 1 in terms of the impact of the mindfulness training conducted during this study; H2 regarding the trainee-coaches' opinions of the mindfulness meditation practice; H5 and 6 on frequency and time spent practising; and H7 academic marks.

Students' opinions of the benefit of mindfulness meditation training

All students who participated were asked at the end of their training once they had completed the second FFMQ to comment

in writing on how beneficial the mindfulness meditation training was in terms of their practice of mindfulness meditation. All provided written comments. Their qualitative responses were rated on a five-point Likert scale, from 1 being not helpful/ beneficial through to 5 being very helpful/ beneficial. Two experienced researchers rated the students' responses independently and, where differences or disagreements occurred, these were discussed and a final rating agreed.

Daily diary logs of home mindfulness meditation practice

Each trainee-coach used a well-known research device, a daily diary (log), to record the time in minutes each day they spent practising mindfulness meditation at home over the three-month period of the mindfulness meditation training (Carmody & Baer, 2008; Lloyd et al., 2018). The logs provided the data to test H5 and 6 in terms of the time spent practising mindfulness meditation, H3 and 4 with respect to the students' opinions on their training and H8 and 9 on academic performance.

Academic performance

Academic performance (i.e. assignment Mark obtained) on the neuroscience and psychology module was a variable which was related to trainee-coaches' performance

with respect to training and practice of mindfulness meditation. The focus of the assignment for the module was to choose and critically review a cognitive behavioural model approach, which included mindfulness coaching.

Demographic variables

Gender and age data were collected and related to all other measures noted above. In the relevant studies in the literature, gender was more frequently used than age, and gender differences with respect to mindfulness-based interventions were found in one study (Rojiani et al., 2017).

Data Analysis

The Statistical Package for Social Science (SPSS) (Field, 2018) was used to analyse the data and to test the hypotheses, specifically Pearson product-moment correlation and Mann-Whitney t-test.

Table 1. Post minus Pre FFMQ score Percentage Changes and FFMQ 1 vs 2 t-test Results

Total & Subscales:	Negative %	Equal %	Positive %	t-test:	t	Sig.
Total Score	15	0	85		69.87	0.00
Observe	6	9	85		48.54	0.00
Describe	28	10	61		46.75	0.00

Awareness	30	5	66	49.88	0.00
Nonjudging	27	10	63	39.16	0.00
Nonreacting	16	10	73	44.56	0.00

n = 67

df = 66

Results

Three tables are presented and explained, with key results relating to the hypotheses emphasised. Table 1 shows the percentage changes between post and pre-FFMQ total and facet scores. Percentage change figures are normally used in such cases and enable direct comparisons between scale scores to be made, not possible when using raw scores. Positive means an increase and Negative a decrease in score. On Total Score, 85 per cent showed an increase and 15 per cent a decrease in score. On the facets, between 61 per cent and 85 per cent recorded an increase and between 6 per cent and 30 per cent a decrease, with Observe showing the largest increase.

In order to determine if these results are significantly different, a one-sample t-test was conducted to compare Pre- and Post-FFMQ total and facet scores. Table 1 shows that all differences were highly significant. In addition, all Post-FFMQ mean scores were higher than Pre mean scores. Overall, these findings reveal clear support for H1.

Table 2 presents the Pearson correlations with significance levels between the variables: Time Spent (Average minutes per day, Min/ Day) and percentage of days available (% Days) spent practising; ratings of Opinions on the practice; academic performance (Ac Marks); and FFMQ total and facet scores Pre (1), Post (2) and Post minus Pre (PP); and age of participants.

All correlations between FFMQ and Time Spent on practice were not statistically significant. These findings reject H5. Regarding Days spent practising, all correlations with Pre FFMQ were not significant. However, correlations with Post FFMQ total score and all facets except Describe were significant. Furthermore, Post minus Pre FFMQ total score and two facets, Observe and Nonjudging, were significant. Therefore, these findings provide some support for H6. Those who spent more days practising were more mindful (i.e. attained higher scores) after practice.

The correlation between opinion of practice and time spent practising was not significant and so H3 is rejected. However, the correlation between opinion of practice and days spent practising was significant and so H4 is supported. Those who spend more days on practice appear to have a higher opinion of that practice.

Ratings on participants' opinions of their practice show a similar pattern. While only two facets showed significant correlations between opinions and Pre FFMQ, Post FFMQ total score and four facets (all except Describe) showed significant relationships. Furthermore, Post minus Pre FFMQ total score and two facets, Observe and Nonjudging, were significantly related. Therefore, these findings provide some support for H2. Those with more favourable opinions tended to be more mindful (i.e. attained higher scores) after practice.

Table 2. Correlations between Diary Log, Opinions, Academic Mark, Age, Experience, FFMQ

	Mins/Day	% Days	Opinions	Ac Marks	Age
Total FFMQ1	0.060	-0.024	0.172	0.256**	0.025
Observe1	0.134	0.070	0.212*	0.182*	-0.020

Describe1	0.010	-0.080	-0.046	0.230*	0.012
Aware1	-0.051	-0.099	0.175	0.122	0.003
Nonjudging1	0.088	-0.015	0.059	0.190*	0.097
Nonreacting1	0.024	0.072	0.236*	0.138	-0.043
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Total FFMQ2	0.112	0.393**	0.401**	0.231*	-0.074
Observe2	0.045	0.218*	0.370**	0.134	-0.157
Describe2	-0.023	0.004	-0.005	0.182	-0.076
Aware2	0.015	0.258*	0.395**	0.133	-0.088
Nonjudging2	0.167	0.486**	0.316**	0.162	0.077
Nonreacting2	0.149	0.259*	0.248*	0.150	-0.023
<hr/>					
Total Post - Pre	0.041	0.416**	0.212*	-0.017	-0.113
ObservePP	-0.131	0.210	0.232*	-0.066	-0.118
DescribePP	-0.047	0.134	0.066	-0.112	-0.094
AwarePP	0.070	0.348**	0.179	0.074	-0.142
NonjudgingPP	0.067	0.462**	0.244*	-0.031	-0.038
NonreactingPP	0.154	0.229*	-0.003	0.063	-0.045
<hr/>					
Mins Per Day	1	0.403**	0.155	0.071	0.220*

% Days	0.403**	1	0.469**	-0.051	0.092
Opinions	0.155	0.469**	1	0.124	0.073
Academic Marks	0.071	-0.051	0.124	1	0.060
Age	.220*	0.092	0.073	0.060	1
N	59	59	67	65	67

** Correlation is significant at the 0.01 level (1-tailed).

* Correlation is significant at the 0.05 level (1-tailed).

Turning to the correlations with academic performance (Ac Marks), Pre FFMQ total score and three facets, Observe, Describe and Nonjudging, were all significantly correlated with Ac Marks, as was Post FFMQ total score. However, not one of the Post minus Pre scores were significantly related. Therefore, these findings provide some support for H2. Those with more favourable opinions tended to be more mindful (i.e. attained higher scores) after practice.

Turning to the correlations with academic performance (Ac Marks), Pre FFMQ total score and three facets, Observe, Describe and Nonjudging, were all significantly correlated with Ac Marks, as was Post FFMQ total score. However, not one of the Post minus Pre scores was significant. Therefore, these findings provide partial support for H7. Those who achieved higher Marks tended to be more mindful (i.e. attained higher scores).

Correlations between Academic Marks and both Time and Days spent practising were not significant and so H8 and H9 were rejected. Furthermore, opinion of the practice was not significantly correlated with Academic Marks and so H10 is also rejected.

Therefore, the amount of, and opinion about, practice do not appear to influence academic performance.

Finally, Age was only significantly correlated with one variable, Time Spent practising. Correlations with Frequency and Opinions of Practice, and Academic Marks were not significant. Therefore, Age does not appear to influence the key variables.

In order to explore the coach trainees' opinions more deeply, they were rated independently by the first two authors on a 5-point Likert scale from *very useful* to being of *no benefit*. The trainees' ratings were then split into two similar sized groups. Those with high, favourable opinions of their practice with ratings of 4 and 5, 46 per cent of the sample; and those with lower, less favourable opinions with ratings of 1, 2 & 3, 54 per cent. t-tests, which compared mean scores of the two groups on all the other variables, were conducted. Results are presented in Table 3.

There were no significant differences on Pre FFMQ mean scores between the two groups whereas Post FFMQ total score and four facet scores (all except Describe) showed significant differences, four of which were highly significant. On Post minus Pre FFMQ there were significant differences between mean group scores on Total Score and the facet Nonjudging. These findings are broadly in line with the relevant correlation results and provide further support for H2.

There was not a significant difference between groups on Time Spent practising, thus providing more evidence for the rejection of H3. However, there was a highly significant difference between groups on Days Spent practising. These findings are in line with the relevant correlation results and provide further support for H4.

There was a significant difference between groups on Marks attained. Those with more favourable opinions of their practice achieved significantly higher Marks than those with less favourable opinions. This finding contrasts with the correlation found between rating of opinion and marks, which was not significant, but do provide partial support for H10.

In summary, the findings confirm the importance of training in the development of insights and skills with respect to attention, presence, empathy, self-regulation and non-judgement, the impact of which are also considered by the literature to be fundamental in mindfulness coaching. An increase in mindfulness in trainee-coaches was found for the majority of the trainee coaches after the practice sessions. A large majority of trainee-coaches (52; 78 per cent) were positive about the training and practice and had found it beneficial. Those with higher levels of mindfulness, and those whose mindfulness had improved, tended to have more favourable opinions of mindfulness, showing positive effects of practice in contrast to those with lower mindfulness. A positive relationship between increases in mindfulness during training and the days available spent practising mindfulness are important findings.

Discussion

Why the training and regular practice of mindfulness is useful for coaches?

Increases in mindfulness

The unifying theme of this study is the place of mindfulness meditation in the development of trainee-coaches. Improvements in mindfulness were found after the practice sessions. The results showed an increase in mindfulness for post- minus pre-FFMQ scores for the majority of the students, a finding supported by de Bruin et al. (2015).

Frequency of, commitment to and favourable opinion of practice

The importance of regular mindfulness meditation practice resonates with the trainee-coaches' opinion about mindfulness practice. Although no significant relationship was found for them between minutes of practice per day and their opinion about the practice, there was a significant positive relationship between the number of days spent

practising, indicative of frequent practice, and their opinion. Therefore, it is not the amount of time spent meditating but rather the frequency of the meditation as a percentage of the number of days available for practice which is significant. This relationship suggests that those who practise regularly are also more likely to be more committed or motivated to the practice of mindfulness meditation than those who do not practise regularly and that this commitment would appear to be reflected in their opinion also about their practice.

Those trainee-coaches with higher post FFMQ2 scores tended to have more favourable opinions of practice, as did those with higher change scores (FFMQPP). The implication of these findings is that those with higher levels of mindfulness, and those whose mindfulness had improved, tended to have more favourable opinions, showing positive effects of practice in contrast to those with lower mindfulness. Numerous positive personal written comments from trainee-coaches offered clear affirmations of how mindfulness meditation training had helped them in their practice of mindfulness meditation. Although a large majority of trainee-coaches (52; 78 per cent) were positive about the mindfulness meditation training and practice and had found it beneficial, a few (15; 22 per cent) offered fewer positive comments.

Table 3. t-test: Opinion Rating Groups 1/2/3 vs 4/5 on all other variables

	Opinion	N	Mean	SD	t	df	Sig.
Total FFMQ1	Low	36	120.8	14.50	-1.55	65	0.13
	High	31	127.6	21.09			

Observe1	Low	36	24.3	4.75	-1.82	65	0.07
	High	31	26.5	5.07			
Describe1	Low	36	28.3	5.51	-0.32	65	0.75
	High	31	28.7	6.38			
Aware1	Low	36	23.6	4.69	-1.31	65	0.19
	High	31	25.3	5.61			
Nonjudging1	Low	36	25.4	6.50	-0.89	65	0.38
	High	31	26.9	6.53			
Nonreacting1	Low	36	19.2	4.00	-0.99	65	0.33
	High	31	20.2	4.74			
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Total FFMQ2	Low	37	131.2	13.47	-4.36	66	0.00
	High	31	146.6	15.61			
Observe2	Low	37	27.7	4.85	-2.87	66	0.01
	High	31	31.0	4.54			
Describe2	Low	37	29.9	5.38	-1.17	66	0.25

	High	31	31.4	5.38			
Aware2	Low	37	25.3	4.21	-3.50	66	0.00
	High	31	28.8	3.98			
Nonjudging2	Low	37	27.0	6.34	-3.70	66	0.00
	High	31	32.1	4.72			
Nonreacting2	Low	37	21.4	3.69	-1.98	66	0.05
	High	31	23.3	4.40			
Total Post - Pre	Low	36	10.5	15.30	-2.18	65	0.03
	High	31	18.9	16.46			
ObservePP	Low	36	3.5	3.32	-1.20	65	0.23
	High	31	4.5	3.37			
DescribePP	Low	36	1.4	4.04	-1.32	65	0.19
	High	31	2.68	3.7			
AwarePP	Low	36	1.72	4.57	-1.52	65	0.13
	High	31	3.48	4.91			

NonjudgingPP	Low	36	1.53	6.12	-2.41	65	0.02
	High	31	5.23	6.41			
NonreactingPP	Low	36	2.31	3.75	-0.86	65	0.39
	High	31	3.06	3.44			
Mins Per Day	Low	31	11.05	4.06	-1.86	57	0.07
	High	28	13.64	6.47			
% Days	Low	31	43.09	25.72	-4.41	57	0.00
	High	28	71.97	24.46			
Academic Marks	Low	34	64.82	8.02	-1.97	63	0.05
	High	31	68.45	7.01			

Note on Opinion Rating: Low Group 1,2,3, 54.4%; High Group 4 & 5, 45.6%.

The results on improvements of mindfulness and on trainee-coaches opinions relate well with the findings indicating a positive relationship between post (but not pre) FFMQ, and significant increases in scores and the days available spent practising mindfulness. These are important findings. Regular mindfulness meditation practice for shorter periods of time is more effective than intermittent or infrequent practice for longer periods of time, findings supported by Soler et al. (2014), cited above. These results suggest that trainee-coaches who choose to practise more frequently may already be committed to developing or maintaining their mindfulness skills than those who do not. As such, those who may be more committed are also likely to be more

motivated to use mindfulness meditation skills in their practice and can see that they have a place in their present or future coaching practice. Some may already have had an appreciation of mindfulness meditation prior to the training, which they felt may have suited their temperament and personality or to be a preferred approach to coaching.

Other areas related to training and practice

Academic performance and mindfulness meditation practice

No significant positive relationships were found between marks achieved on the neuroscience and psychology module and the amount of time spent on mindfulness meditation practice; the number of days spent practising; or ratings of the students' opinion of their mindfulness meditation training. A possible explanation of these findings is that the assignment marks measure knowledge and understanding of the general subject area, and not the skills developed in the practice – the focus of this study. Therefore, Marks are based on work on a number of topics, only one of which is mindfulness.

Notwithstanding, literature cited above shows a relationship between academic performance (Marks achieved) and mindfulness meditation practice, in that practice provides the conditions which can enhance academic learning and performance in terms of increasing awareness, improving mood, attention, processing information, as indicated by improvements on cognitive tasks and mindfulness scores (Zeidan et al., 2010). This contrasts with our findings and merits further investigation.

Those with higher Mindfulness scores at the start of the module (FFMQ 1) and at the end (FFMQ 2) were likely to achieve higher Marks but those with higher FFMQ Post minus Pre scores were not. A possible explanation may be that many of these students already had high levels of mindfulness and so the scope for further development was limited. Thus, the improvements in mindfulness (from FFMQ PP scores) were not related to Marks achieved.

Demographic variables

There were *no* significant correlations between Age and any of the FFMQ scores. Furthermore, t-tests comparing gender differences on *all* variables produced *no* significant differences between males and females. The literature is sparse on this subject and what does appear relates only to facets of mindfulness. Soler et al. (2014) found differences between the effect of both gender and age on FFMQ mindfulness facets and Baer et al. (2008) found that age by itself is modestly correlated with the FFMQ facet Acting with Awareness. Further research on demographic differences in mindfulness appears to be required.

Practical applications of the findings

The major findings of this study have implications for practice of mindfulness meditation. There was an increase of mindfulness in trainee-coaches between the start and end of practice sessions. The implication of this finding is that the practice of mindfulness meditation appears to have had a beneficial effect on mindfulness of the trainee-coaches and that practice seems to be effective and should continue. Further, given the linkage between coach competencies (ICF, 2019) encouraging coach presence and client engagement, it may be concluded these aspects of coach practice will also be enhanced.

Whereas the time spent practising does not improve mindfulness as measured by FFMQ, the frequency of practice sessions and opinions of the practice do. Furthermore, all FFMQ facets except Describe indicated improvements. The clear implication here is that trainee-coaches should be encouraged to have frequent and regular practice sessions, rather than a few lengthy sessions.

Although opinions of practice were not significantly correlated with marks, the group with high/favourable opinions (4 and 5) achieved significantly higher Marks than those with less favourable opinions (1, 2 and 3). The practical implication of this finding is that

lessons might be learned by those administering this training program from the opinions of both these trainee- coaches groups in terms of the impact these could have on their development.

Students with higher mindfulness scores at the start of their mindfulness meditation module (FFMQ test 1) were likely to achieve higher Marks. This also extended to three facets (Observe, Describe and Non- judging) and to the total score on the post test (FFMQ2). Furthermore, significant t-test results between favourable and less favourable opinion groups found significantly higher marks for the favourable group. These findings suggest that at the outset those trainee-coaches with higher levels of mindfulness overall and on the three facets were likely to achieve higher marks. This provides a case for the use of FFMQ as an instrument to select trainee-coaches (students) for courses.

Limitations of the research

This was a single study on a specific coaching programme in one business school. It raises questions about how far the results can be generalised. However, because of the limited literature on mindfulness training on coaching programmes, this study does provide some rare and useful findings. The comparison of these results with those of other programs is difficult because ‘there is no standardisation between programs’(McConville, 2017, p. 42). Notwithstanding, some of the outcomes of this study are supported in the literature above by other mindfulness meditation training results.

The study did not probe the student participants’ future considerations with respect to their personal practice and professional use of mindfulness meditation. This would have offered useful insights to gauge the students’ intentions to use or continue to use mindfulness meditation, in different ways and contexts.

Further research

Students with more coaching experience might logically be expected to score higher on mindfulness meditation since they would be considered to have a broader or more in-depth appreciation of coaching and how and where mindfulness meditation could most appropriately be used in coaching. This premise needs to be considered in future research on other programmes.

Since this study did not find a significant difference between males and females or provide a compelling explanation for this, it is suggested that future research into mindful-ness meditation further examines the impact of gender in mindfulness meditation training.

Given that practice frequency has a relationship to the opinion students had about mindfulness meditation practice, it is suggested further research be conducted on this relationship on other programmes, in terms of the development of trainee-coaches, and also perhaps of practising coaches, who are seeking to develop their mindfulness meditation skills. Such research could also examine the short- and long-term impact of the mindfulness training and practice and the trainee coaches' continued commitment to these in their day-to-day coaching practice.

Finally, additional related work by the authors which further explores the development of mindfulness in coaching, the focus of which is the use of mindfulness by experienced coach practitioners (Van Den Assam & Passmore, 2022) and coach supervisors (Van Den Assam, Passmore & Dulewicz, 2022) is already underway. Based on the results of that research and of this study, the authors' aim is to present an integrated understanding and position for the training and development of mindfulness for coach practitioners.

Conclusion

Three hypotheses were supported: The majority will have higher FFMQ scores on mindfulness meditation after the training than before (H1). There is a positive relationship between trainees' FFMQ test scores and available days spent practising (H6). There is also a positive relationship between opinion of their mindfulness meditation practice and the days available spent practising (H4). Two other hypotheses were partially supported: There is a positive relationship between FFMQ scores and opinions about mindfulness meditation practice (H2); and there is a positive relationship between FFMQ scores and academic achievement (H7). Hypotheses 3, 5, 8, 9 and 10 were rejected.

Mindfulness meditation training of trainee-coaches complements and aids the development of professional and personal skills, and the use of mindfulness in coaching. The training offers opportunities for greater interpersonal insights, and the use of mindfulness meditation in coaching practice. The contribution of this research has broad implications for the training and use of mindfulness meditation in academic settings. In particular, the use of the FFMQ in the selection of students, and possibly extended to teaching staff, in mindfulness meditation training and practice could promote a positive mindfulness environment in support of both students and faculty.

In addition, the implications of the applicability of mindfulness training for coaches would be that it is also useful in the development of mindfulness for coaching practice generally. Since the use of mindfulness in coaching has become more prominent in the coaching literature, a broader application and interest in it is likely to continue to evolve. Not only in the practice of coaching and evidence of its impact, but also in terms of continuing professional development, coaching supervision, academic research and for professional coaching organisations.

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