



An Experimental Study: Mindfulness and Gratitude v/s Neuroticism and Life Satisfaction

Dr. Sonia Kapur and Moiez Salim Satyani

MYAS-GNDU, Department of Sport Sciences and Medicine, Guru Nanak Dev University,
Amritsar, Punjab, India

Abstract

Objectives: The personal and professional demands in athletes' lives often lead to distress and reduced life satisfaction. The exploration of Gratitude and Mindfulness together, albeit being individually effective, hasn't received adequate attention. Thus, the present study's purpose was to assess the effects of mindfulness meditation and gratitude reflection on personality and life satisfaction of players. **Method:** A quasi-experimental, 3 x 3 mixed factorial design was proposed to conduct the study. Inter-Collegiate to National level athletes went through a screening process before being recruited into any of the 3 groups: Control, Mindfulness, and Gratitude (N = 25). Athletes were tested with Big 5 Personality and Satisfaction of Life Scale prior to their first intervention that constituted mindfulness meditation for the Mindfulness group and gratitude reflection for the Gratitude group. After the first intervention, data of all the athletes were collected and second intervention of Gratitude Reflection was administered to Mindfulness group (Mindfulness*Gratitude). Likewise, Gratitude group received the mindfulness meditation (Gratitude*Mindfulness). Data were gathered again and all the data at 3 different time periods were analyzed. **Results:** The statistical analysis was performed using ANOVA and ANCOVA that resulted in significant within-group differences in life satisfaction and neuroticism in both Mindfulness and Gratitude groups. **Conclusion:** Both mindfulness and gratitude interventions, when administered together, led to greater improvements in life satisfaction and neuroticism than when either only Mindfulness or Gratitude intervention was given, thus advocating for the necessity of combining the two interventions to maximize the satisfaction of life of the athletes.

Keywords: Gratitude Reflection, Mindfulness Meditation, Athletes' Life Satisfaction, Neuroticism



An Experimental Study: Mindfulness and Gratitude v/s Neuroticism and Life Satisfaction

The sports environment is a source of both jubilation and despondency for an athlete; years of discipline and devotion to their sport is hoped to culminate in right execution when it matters the most. Such is the desire of the coach, support staff, and athletes themselves as they synergistically leave no stone unturned to enhance performance. While such an approach towards athletic efforts are important in their own right, attention being isolated towards sport performance enhancement can lead to detrimental effects. With an excessive focus on winning, the coach-led environment has the potential to become damaging for the athlete's overall well-being (Reinboth&Duda, 2004).

Athletes' preparation for the competition entails a lot of challenges that increases their stress response. When qualitatively studied, athletes' stressors could be classified into 3 distinct types: a double load, obligations unique to sports, and circumstances (Nixdorf et al., 2015). Among these three, Nixdorf et al. (2015) found that sports-specific demands, such as heavy training loads, were cited by athletes as an important stressor. Moreover, Santomier (1983) found that the most significant aspects of stress in a sporting context may be psychological ones. Exposure to these factors can have profound effects on athletes as, upon experiencing these factors, they may not be in a positive mental state, resulting in below par performance (Fadare et al., 2022). Thus, paying attention to an athlete's well-being is as important as performance enhancement, if not more. In the context of elite sport, early detection and treatment of mental health symptoms are crucial, as mental, along with physical health, increase the likelihood of achieving peak performance and overall well-being (Purcell et al., 2019).

The importance of well-being of athletes, and people at large, has increased due to recent advancements in the field of psychology. Since the advent of the Positive Psychology movement back in the early 2000s under the leadership of Martin Seligman that stemmed from the need to understand and acquire well-being for the masses (Lopez & Snyder, 2011), attempts of enquiry into well-being has led to bisection of the concept into 2 broad themes: hedonism and eudaimonism (Ryan & Deci, 2001). Hedonism refers to the idea that happiness and pleasure are core components of well-being, while, on the other hand, eudaimonism proposes that realizing one's true nature or daimon and achieving full potential of human growth is the meaning of well-being (Ryan & Deci, 2001). The hedonists equate hedonism with well-being, and describe well-being as a construct that has 2 ends on a continuum, one being pleasure and the other being pain. While these 2 dimensions can be measured using various methods, the most widely used one is Subjective Well-Being and according to Ryan and Deci (2001), life satisfaction, the presence of a positive mood, and the absence of a negative mood make up SWB, which is frequently referred to as happiness.

Life Satisfaction is one of the indices of quality of life that reflects how well people flourish when combined with indications of mental and physical health (Veenhoven, 1996). It is defined as the degree to which a person positively views the overall quality of his or her life (Veenhoven, 1996). Proctor et al. (2009) identified several benefits related to high life satisfaction, namely, greater support from family, friends, and other social links, very less



percentage of behaviors that could harm others, as well as greatly decreased percentage of behaviors that would lead to self-harm, low levels of negative affectivity, greater levels of self-belief in potency in activities of school, emotional control, and social interaction.

Clearly, a multitude of benefits accrue when life satisfaction is enhanced but, the question is, how can we enhance life satisfaction? According to Chen et al. (2017), gratitude holds promise as a contributing factor towards enhancing life satisfaction. In the study conducted on collegiate athletes of Taiwan, Chen et al. (2017) mentioned that gratitude's impact on life satisfaction is due to the broaden-and-build mechanism that leads one to expand their awareness of positives and activate behaviors that help in the accumulation of more resources for accomplishing life's objectives. Since the individual begins recognizing even little things as blessings, and is reminded of the wonderful aspects of life consisting of those gifts, gratitude prevents him/her from becoming used to pleasant living conditions (Chen et al., 2017).

However, Chen et al. (2017) also commented on the role of emotional awareness and confirmed the role of *mindfulness* acting as a moderating variable in determining the actual link between gratitude and life satisfaction. Mindfulness is defined as "as moment-to-moment, non-judgmental awareness, cultivated by paying attention in a specific way, that is, in the present moment, and as non-reactively, as non-judgmentally, and as open heartedly as possible" (Kabat-Zinn, 2015). Since there's a discrepancy between the intentions and actions of people when they are not aware of their attitudes, an enhanced awareness of internal attitudes would activate the broaden-and-build mechanism completely, allowing the individual to act on those internal gratefulness states, thereby inculcating well-being (Chen et al., 2017).

Purpose of the Present Study

The present study assessed the impact of gratitude and mindfulness interventions on changes in personality and life satisfaction among athletes. Specifically, the investigation attempted to answer 3 questions: First, do gratitude reflection and mindfulness meditation influence life satisfaction in any of the three treatment groups (control, Mindfulness, Gratitude)? Second, is there any change in personality due to gratitude and mindfulness interventions? Third, do the interventions impact the two genders differently? Previously, Chen et al. (2017) found that mindfulness moderated the relationship between gratitude and life satisfaction; it was observed that gratitude did not always lead to life satisfaction and the awareness of emotions was an important moderating factor involved. However, being a correlational study, it couldn't determine any causation, and thus, the present study aimed to fill the gap by establishing causal links between gratitude and mindfulness interventions and personality and life satisfaction of the athletes

Method

Participants

The participants of the study were enrolled using a convenience sampling method where the primary experimenter personally met with all the potential research participants of different sports. The first step towards establishing rapport with athletes began with an interaction with the coach and athletes of the sport being contacted. These interactive sessions involved a didactic display of the role of mindfulness and gratitude in enhancing well-being, followed by a question and answer session where the athletes were free to ask any questions pertaining to their role and expectations towards the study. In total, 90 participants from Guru Nanak Dev University and Khalsa College, Amritsar were approached to seek their approval to participate in the study.

The primary researcher asked all the athletes to fill the informed consent and the two screening forms. Of the 70 athletes who had agreed to proceed further, the screening data were obtained to filter out athletes who already were high on gratitude and mindfulness. This filtering process was considered an essential component of the research design as higher gratitude and mindfulness wouldn't have fetched a greater impact on the dependent variables being studied (personality and life satisfaction). After filtering out athletes and witnessing many athletes dropping out, the final sample size constituted 25 athletes.

Table 1

Age and Player Distribution in Each of the Three Groups

Variable	Gender	Age		Player Distribution (%)
		<i>M</i>	<i>SD</i>	
Control group	Female	23.50	1.73	16
	Male	24.25	0.96	16
Mindfulness	Female	22.00	0.67	16
	Male	19.00	7.33	16
Gratitude	Female	17.60	0.89	20
	Male	17.00	1.41	16

Note. Total Sample (N) = 25



Procedure

This quasi-experimental, 3 x 3 mixed factorial design study incorporated 3 distinct groups: Control group, the Mindfulness Group (Experimental Group 1), and the Gratitude Group (Experimental Group 2). Each group constituted 8 participants (4 male and female athletes each) except the Gratitude group that consisted of 4 male and 5 female athletes.

These 3 groups were administered Big 5 Personality test and Satisfaction with Life Scale at 3 different time periods. The first phase of data collected was scheduled before the intervention (Pre-Intervention phase). The second phase of data collection was held after the first month of intervention, and the final phase of data collection concluded immediately after the second intervention. Ideally, these 3 distinct phases were arranged such that there's a gap of exactly 4 weeks between the two set time points of data collection.

The two experimental groups, Group 1 and Group 2, received both the interventions of mindfulness meditation and gratitude reflection. The only difference between the two groups was the order of the interventions. The Mindfulness group (Experimental Group 1) received mindfulness meditation as their first intervention, followed by gratitude reflection (ultimately making this group Mindfulness*Gratitude). On the other hand, Gratitude group (Experimental Group 2) received gratitude reflection as their first intervention, followed by mindfulness meditation (making it Gratitude*Mindfulness).

Study Intervention

The study employed 2 distinct interventions to see their impact on personality and life satisfaction, namely, mindfulness meditation and gratitude reflection. Mindfulness meditation is a type of meditation that consists of individuals sitting in an upright stance with their eyes either open or closed and involves paying conscious attention to whatever the person decides to pay attention to (Kabat-Zinn, 2005). In the present study, mindfulness meditation incorporated the use of breath as an object of attention or “cue” for the participants to come back to whenever their mind wandered. This mindfulness meditation followed a script that's very similar to the script used by the Veterans Health Administration (VHA) Office of Patient Centered Care & Cultural Transformation (VA.gov / *Veterans Affairs*, n.d.). The study engaged in a protocol wherein the participants were asked to complete the 20 minute long mindfulness meditation thrice a week, for 4 weeks.

The gratitude reflection was chosen as the gratitude intervention. This activity is very similar to the blessing exercise discussed by Emmons and McCullough (2003) and involved sitting in a meditation-like stance that incorporated weaving varied pictures of events, places, people, and surroundings together in light of feeling thankful for each of these in a steady stream of instructions delivered by the researcher (Schueller, 2010). The researcher himself followed a common script (Mirgain, 2016) for all the athletes that lasted approximately 10 to 12 minutes. This intervention was conducted thrice a week for 4 weeks, just like the intervention of mindfulness meditation¹.

¹For full intervention scripts, please contact Moiez Salim Satyani via email at moiezsatyani@gmail.com



Instrument

Gratitude Questionnaire – Six Item Form

The GQ-6 is a short, self-report measure of the disposition to experience gratitude. Participants answer 6 items on a 1 to 7 scale (1 = *strongly disagree*, 7 = *strongly agree*). Two items are reverse-scored to inhibit response bias. Psychometrically, the GQ - 6 has shown tremendous strength, with potent one-factor structure and high internal reliability. Furthermore, there is evidence that the GQ-6 positively corresponds with emotional, prosocial, spiritual conceptualizations (McCullough et al., 2002).

15-Item Five – Facet Mindfulness Questionnaire

The Five Facet Mindfulness Questionnaire (FFMQ-15) is a 15 question self-report scale that measures mindfulness with regards to thoughts, experiences, and actions in daily life. The FFMQ-15 measures 5 subscales of mindfulness: Observing, Describing, Acting with Awareness, Non-judgement, Non-reactivity (Baer et al., 2008). While testing the reliability of the FFMQ - 15, it was found that the cronbach's alpha values for FFMQ-15 subscales ranged from 0.64 to 0.80 as measured prior to Mindfulness Based Cognitive Therapy (MBCT) intervention given to the study group. These range scores showed improvement after MBCT and ranged from 0.69 to 0.83. These alpha values are regarded as appropriate for measurements of psychological dimensions. The validity of 15-Item FFMQ can be determined from the significant small/moderate to large negative associations between features of the FFMQ-39 and FFMQ-15 and depression (BDI-II) and negative ruminating (CERTS). This shows that the magnitude of the relationships between the FFMQ-15 aspects and depression/negative ruminating were similar to those between the FFMQ-39 (Gu et al., 2016).

Big 5 Personality Test.

The Big 5 Personality test stemmed from the contributions of many independent researchers, namely, Gordon Allport, Henry Odbert, Raymond Cattel, Goldberg, and McCrae & Costa. The three-month test-retest reliabilities vary from .80 to .90, with a mean of .85, and the alpha reliabilities of the BFI scales generally range from .75 to .90 and average above .80 in U.S. and Canadian data. Significant convergent and divergent relationships with the other Big Five instruments and peer evaluations are examples of validity evidence (John & Srivastava, 1999).

Satisfaction with Life Scale.

The SWLS is a short 5-item instrument designed to measure global cognitive judgments of satisfaction with one's life. The scale usually requires only about one minute of a respondent's time where they are required to assign a score between 1 and 7 (1 = *strongly disagree*, 7 =



strongly agree). The test's reliability was calculated using the test-retest procedures and it was found that the resulting average coefficient alpha, obtained after averaging the coefficient alpha obtained after a 2 week interval and 1 month interval, was 0.85. Thus, the scale demonstrates high reliability. Additionally, the agreement between peer and family evaluations of life satisfaction points to the concept's high degree of universality and stability through time. The results reveal that life satisfaction is a continuous and stable phenomena, rather than something that a subject just constructs in the moment based on immediate conditions, thus providing evidence for the instrument's validity (Pavot et al., 1991).

Statistical Analysis

The data was described using the standard measures of mean and standard deviation. The data was compared to determine significant differences between the three time periods as well as between the 3 treatment groups.

One-way ANOVA was used to analyze “between-group” differences in the data while, on the other hand, repeated measures ANOVA were used to analyze “within-group” differences. ANCOVA was used to control the effects of any pre-existing differences between the three groups during Pre-Test 1. Level of significance was set at 0.05. SPSS statistics version 23 (IBM, Chicago, IL, USA) was used to conduct the statistical analysis of the data.

Results

The results of this study can be divided into 3 sections depending upon the variables studied and the test employed. The first section (table 3) highlights differences within the group. Repeated Measures ANOVA was used to determine significant differences between pre-test, post-test 1, and post-test 2 scores in each of the three groups of the study: control, Mindfulness, and Gratitude. The second section of the results displays differences in the personality and life satisfaction scores between the group at post-test 1 and post-test 2 as well as when all the time periods were merged to see the overall effect. The third section highlights gender differences within the three time periods during which the data were collected.

Within-Group Analysis

Table 2

Repeated Measures ANOVA Comparing Pre-test, Post-Test 1, and Post-Test 2 scores in each of the 3 experimental groups

Variable	Control	Mindfulness	Gratitude
Extraversion	1.067	0.819	1.574
Agreeableness	0.816	0.359	0.602
Conscientiousness	0.573	1.130	0.634
Neuroticism	1.144	9.155**	15.857***
Openness	1.476	1.451	0.945
Life Satisfaction	2.456	26.970***	32.378***

Note. Values in the table indicate F ratios obtained after analyzing data between Pre-Test, Post-Test 1, and Post-Test 2 in each of the experimental groups. Control values at F (2, 14); Mindfulness values at F (2, 14); Gratitude values at F (2, 16).

** $p < 0.01$. *** $p < 0.001$.

Table 2 depicts the outcome of the data analysis. Both the intervention groups, Mindfulness and Gratitude, showed a significant difference in neuroticism when the differences among all the three time periods were considered. For the Mindfulness group, the difference was significant at $F(2, 14) = 9.155$ ($p = 0.003$), with Fisher’s Least Significant Difference (LSD) test portraying substantial difference between “pre-test” and “post-test 2” scores ($M = 4.750$, $SD = 1.146$, $p = 0.013$). This suggests that the neuroticism significantly decreased in the Mindfulness group, although such a change was found only when both the mindfulness meditation and gratitude reflection interventions were given to the athletes.

For the Gratitude group, the scores of neuroticism decreased substantially as can be depicted by $F(2, 16) = 15.857$, $p = 0.000$. The scores on neuroticism dropped significantly from “pre-test” to “post-test” 1 scores ($M = 2.222$, $SD = 0.547$, $p = 0.011$) as well as from “post-test 1” to “post-test 2” ($M = 3.000$, $SD = 0.972$) at $p = 0.045$, indicating that gratitude reflection proved potent in reducing neuroticism which was further fueled by mindfulness meditation as the scores kept on decreasing. As a result, the largest difference was found between “pre-test” and “post-test 2” scores ($M = 5.222$, $SD = 1.164$) at $p = 0.006$.

There was a significant difference found in the scores of life satisfaction as well in both the treatment groups. In the Mindfulness group, life satisfaction scores differed substantially as

highlighted by $F(2, 14) = 26.97$ ($p = 0.000$). Fisher’s Least Significant Difference (LSD) test further revealed significant differences between all the three time periods. The mean difference between “pre-test” and “post-test 1” was found to be 3.750 ($SD = 1.191$) at $p = 0.049$. While comparing the mean difference between “post-test 1” and “post-test 2”, the mean value was even bigger ($M = 4.625$, $SD = 0.885$, $p = 0.004$), highlighting the enhanced role of gratitude in improving life satisfaction scores after mindfulness meditation intervention. The mean difference was found to be the greatest between “pre-test” and “post-test 2” ($M = 8.375$, $SD = 1.308$, $p = 0.001$)

Similar results were found in the Gratitude group as well. The difference among the three time periods was found to be $F(2, 16) = 32.378$, $p = 0.000$. Life satisfaction increased significantly from “pre-test” to “post-test 1” condition as shown by a mean difference of 4.667, ($SD = 1.08$, $p = 0.008$). Similar changes were recorded between “post-test 1” and “post-test 2” scores as they increased by a mean value of 3.444 ($SD = 0.556$, $p = 0.001$). Indeed, the greatest difference was between “pre-test” and “post-test 2” scores ($M = 8.111$, $SD = 1.263$, $p = 0.001$). As evident from the results, the individual interventions were successful in enhancing the life satisfaction of players in their own right which, when combined, demonstrated even greater impact than that depicted by the interventions individually. Both the intervention groups, Mindfulness and Gratitude, found substantial increase in life satisfaction of players.

Between-Group Analysis

Table 3

One-Way ANOVA Comparing Scores Among 3 Experimental Groups at Each of the 3 Time Periods.

Variable	Post-test 1	Post-test 2	Overall
Extraversion	0.276	0.009	0.387
Agreeableness	3.559*	1.204	3.393
Conscientiousness	0.973	0.208	0.681
Neuroticism	2.281	2.433	2.584
Openness	6.023**	4.248*	4.869*
Life Satisfaction	0.084	2.537	2.276



Note. Values in the table indicate F ratios obtained after analyzing data between Control, Mindfulness, and Gratitude groups at each of the 3 time periods. Post-Test 1, Post-Test 2, and Overall values at F (2, 19).

* $p < 0.05$. ** $p < 0.01$.

Table 3 highlights differences in personality and life satisfaction scores between the three groups of the study: Control, Mindfulness, and Gratitude at three different time periods, “post-test 1”, “post-test 2”, and “overall”. Agreeableness, a facet of personality, showed significant improvement in its score between the group at post-test 1 [$F(2, 19) = 3.559, p = 0.049$], with a sharp, substantial difference between Mindfulness and Gratitude ($M = 5.03, SD = 2.025, p = 0.023$), suggesting that agreeableness scores were less in Gratitude group when compared to Mindfulness group after first intervention.

Table 4 also suggests a significant difference in the scores of openness at all the 3 different time periods. At “post-test 1”, openness differed among the 3 groups significantly [$F(2, 19) = 6.023, p = 0.009$], with a substantial change evident in Control and Mindfulness group ($M = 7.63, SD = 2.248$) at $p = 0.003$, indicating that openness was found to be less in Mindfulness group as compared to the control group after the first intervention. The post hoc analysis also revealed a significant difference between Mindfulness group and Gratitude group ($M = 5.60, SD = 2.185$) at $p = 0.019$, highlighting the fact that the Gratitude group had greater openness as compared to the Mindfulness group after the first intervention.

At post-test 2 too, the 3 groups differed amongst each other in the scores of openness [$F(2, 19) = 4.248, p = 0.030$], with a mean difference of 5.63 ($SD = 1.931$) at $p = 0.009$ between control and Mindfulness groups, indicating that openness was found to be less in Mindfulness group as compared to the control group after the second intervention.

When the openness scores were compared among the three groups after merging all the three time periods together, we found a significant difference [$F(2, 19) = 4.869, p = 0.020$]. The control and Mindfulness group differed by an average of 6.04 ($SD = 1.967, p = 0.016$), suggesting that openness was less in Mindfulness group as compared to the control group.

Between Gender Analysis

Table 4

Gender Difference at each time period

Variable	Post-test 1	Post-test 2	Overall
Extraversion	0.066	0.093	0.421
Agreeableness	0.136	1.042	0.117
Conscientiousness	1.269	1.542	1.282
Neuroticism	0.917	0.111	0.059
Openness	7.072*	3.744	4.547*
Life Satisfaction	0.081	1.003	3.027

Note. Values in the table indicate F ratios obtained after analyzing data between the two genders in each of the 3 time periods. Post-Test 1 values at F (1, 25); Overall values at F (1, 19).

* $p < 0.05$

Table 4 highlights the differences in gender in personality and life satisfaction scores of the athletes. A significant difference was found between male and female athletes at post-test 1 [F (1, 25) = 7.072, $p = 0.015$], where female athletes were found to have a greater score in openness (38.15).

Another between gender comparison after collapsing the 3 time periods into 1 led to us finding a significant difference [F (1, 19) = 4.547, $p = 0.046$], with scores of female athletes being greater (38.56).

Discussion

The purpose of the study was to examine the effects of mindfulness meditation and gratitude reflection on personality and life satisfaction among players. Mindfulness meditation and gratitude reflection have proved to be potent tools in influencing the way people relate to their well-being. Specifically, it led to statistically significant changes in life satisfaction and some aspects of athletes’ personality, especially neuroticism.



The outcome of the present study firmly establishes the importance of mindfulness meditation and gratitude reflection in increasing the life satisfaction of the athletes and bolsters the findings of other relevant research that sought to demonstrate a link between gratitude, mindfulness, and life satisfaction. Recent evidence obtained from a study conducted on working adults points towards a strong relationship between mindfulness and life satisfaction as well as gratitude and life satisfaction; however, even greater support was found for the mediating role of gratitude that strengthened the association between mindfulness and life satisfaction (Carr, 2023). The current study strongly substantiates the above finding; while mindfulness meditation enhanced life satisfaction, gratitude reflection subsequently increased life satisfaction even more, further contributing towards well-being of the athletes. This trend was also observed when gratitude reflection was provided as first intervention followed by mindfulness meditation. Another study that corroborates the above outcome is the one conducted by Cheung and Lau (2021) on the Chinese population spanning adults aging from twenty to seventy two years. This investigation revealed a significant relationship between mindfulness and life satisfaction, with gratefulness being the major influencing factor in the connection between the two. Moreover, among athletes, the significance of gratitude in enhancing well-being is already a confirmed hypothesis (Gabana, 2019). By enhancing the feeling of being intentionally benefited by the benefactor, gratitude has an innate tendency to evoke an upward spiral of positive emotions that not only broadens the vision to look for moments that one could savor, but also engage in activities that would lead to accumulation of resources and, in turn, act as a source of support in future stressful situations (Fredrickson, 2004). Chen et al. (2017) discussed the relevance of mindfulness as a mediating factor that helps an individual become more aware of those grateful tendencies and enables him/her to act in a prosocial manner, thus enhancing life satisfaction. While Chen et al. (2017) focused on the theoretical correlates between the 3 constructs, the current study promotes such an association by confirming mindfulness's causal relevance in enhancing life satisfaction beyond the level already causally enhanced by grateful emotions.

The present study also illustrates the intricacies of the relationship between mindfulness, gratitude, and neuroticism. As the findings from the current study suggest, gratitude firmly decreased neuroticism among the athletes; however, mindfulness meditation intervention, given after gratitude reflection, managed to decrease neuroticism even further, beyond the level attained by gratitude intervention alone. This suggests that mindfulness acted upon the beneficial effects of gratitude and amplified these initially obtained benefits. A similar result was found when gratitude reflection was given after mindfulness meditation. These outcomes of the current study - gratitude reflection and mindfulness meditation significantly decreased neuroticism among athletes - sturdily defends assertions from other studies that gratitude is negatively associated with neuroticism (Szcześniak et al., 2020). Furthermore, the moderating role of mindfulness in attenuating the reactive tendencies of those high on neuroticism (Feltman et al., 2009) adds to the robust foundation that neuroticism is liable to change given that athletes, and people at large, develop certain traits and characteristics that inhibit negative affectivity. These are some major revelations in personality research where both gratitude and mindfulness interventions proved to be an effective tool in reducing neuroticism and can be the ultimate means through which many problems stemming from high neuroticism can be managed.



In addition to supporting the above assertions, the current study also revealed a significant gender difference in openness to experience dimension of personality, which falls in line with the study conducted by Rahmani and Lavasani (2012) to determine the gender difference in personality and sensation seeking in undergraduate students. Moreover, a statistically significant difference was found between scores of Mindfulness and Gratitude group for agreeableness at post-test 1, with the gratitude group scoring less than the mindfulness group. However, no such difference was found at post-test 2, nor when the data was analyzed for overall between subject effects. Although no formal studies have been conducted that directly expresses the correlation between mindfulness, gratitude, and agreeableness, Szcześniak et al. (2020) found a significant relationship between gratitude and agreeableness in their study on polish residents. On the other hand, Solomon and Esmaeili (2020) found a strong link between mindfulness and agreeableness and validated the propensity of agreeableness to increase in the Mindfulness group.

The present study has not been able to demonstrate a significant difference between control, the Mindfulness, and the Gratitude group as far as life satisfaction is concerned. While the differences in life satisfaction scores within the group (for both Mindfulness and Gratitude groups) have been realized, none of the three groups depicted a significant difference amongst them. One of the possible causes for such an occurrence could be the duration of the interventions given. The mindfulness meditation and gratitude reflection were offered for 4 weeks, thrice a week and although it has led to a statistically significant outcome, it may have fallen short in terms of attracting long-term between group changes. A study conducted by Proctor et al. (2011) imbibed character strengths-based interventions within the school curriculum of the adolescents being studied that helped the researchers assess the impact of interventions given over a 6-month period. Since their research resulted in meaningful between-group differences using an intervention protocol that lasted at least 6 months, future research based on gratitude and mindfulness interventions can also implement similar experimental procedures to examine whether interventions over a long period of time yield desirable, between-group results.

The current study has also observed a significant difference between Control and the Mindfulness group for Openness to Experience sub-dimension, wherein the Mindfulness group fared worse. On the other hand, the Gratitude group had significantly greater scores than the Mindfulness group's score for openness to experience at post-test 1. While it has been established that mindfulness positively influences openness to experience (Kaviani&Hatami, 2016), such a confounding finding in the current study could only be attributed to small sample size. With greater number of participants in each group, the analysis is more likely to reveal true between-group differences without being marred by biases that are likely to be introduced due to a restricted sample.



Conclusion

The present study has yielded useful results in perpetuating the examination of gratitude and mindfulness as intervention tools to guide and enhance human well-being. It can be concluded that mindfulness meditation and gratitude reflection interventions are effective in inducing positive change in the life satisfaction of the athletes, and that both the interventions, when combined together, can result in a greater improvement in measures of life satisfaction and personality than when either only Mindfulness or Gratitude intervention is administered. While the present study may have supported our initial suppositions and delivered results in light of our expectations, further research is warranted to corroborate the findings to identify the applicability of results to athletes of all age and gender.

References

- Baer, R. A., Smith, G. T., Lykins, E. L. B., Button, D. T., Krietemeyer, J., Sauer, S. E., Walsh, E., Duggan, D. S., & Williams, J. C. (2008). Construct Validity of the Five Facet Mindfulness Questionnaire in Meditating and Nonmeditating Samples. *Assessment, 15*(3), 329–342. <https://doi.org/10.1177/1073191107313003>
- Carr, P. (2023). *The Roles of Mindfulness and Gratitude on Life Satisfaction* [PhD dissertation]. Bellevue University.
- Chen, L., Wu, C., & Chang, J. (2017). Gratitude and Athletes' Life Satisfaction: The Moderating Role of Mindfulness. *Journal of Happiness Studies, 18*(4), 1147–1159. <https://doi.org/10.1007/s10902-016-9764-7>
- Cheung, R., & Lau, E. (2021). Is Mindfulness Linked to Life Satisfaction? Testing Savoring Positive Experiences and Gratitude as Mediators. *Frontiers in Psychology, 12*. <https://doi.org/10.3389/fpsyg.2021.591103>
- Emmons, R. A., & McCullough, M. E. (2003). Counting blessings versus burdens: An experimental investigation of gratitude and subjective well-being in daily life. *Journal of Personality and Social Psychology, 84*(2), 377–389. <https://doi.org/10.1037/0022-3514.84.2.377>
- Fadare, S. A., Mae, I. L., Ermalyn, L. P., Kharen, M. G., & Ken, P. L. (2022). Athletes' Health and Well-Being: A Review of Psychology's State of Mind. *American Journal of Multidisciplinary Research and Innovation, 1*(4), 44–50. <https://doi.org/10.54536/ajmri.v1i4.551>
- Feltman, R., Robinson, M. E., & Ode, S. (2009). Mindfulness as a moderator of neuroticism–outcome relations: A self-regulation perspective. *Journal of Research in Personality, 43*(6), 953–961. <https://doi.org/10.1016/j.jrp.2009.08.009>
- Fredrickson, B. L. (2004). The broaden–and–build theory of positive emotions. *Philosophical Transactions of the Royal Society B, 359*(1449), 1367–1377. <https://doi.org/10.1098/rstb.2004.1512>
-



- Gabana, N. T. (2019). Gratitude in Sport: Positive Psychology for Athletes and Implications for Mental Health, Well-Being, and Performance. *Springer International Publishing eBooks*, 345–370. https://doi.org/10.1007/978-3-030-20583-6_15
- Gu, J., Strauss, C., Crane, C., Barnhofer, T., Karl, A., Cavanagh, K., & Kuyken, W. (2016). Examining the factor structure of the 39-item and 15-item versions of the Five Facet Mindfulness Questionnaire before and after mindfulness-based cognitive therapy for people with recurrent depression. *Psychological Assessment*, 28(7), 791–802. <https://doi.org/10.1037/pas0000263>
- John, O. P., & Srivastava, S. K. (1999). The Big Five Trait taxonomy: History, measurement, and theoretical perspectives. *Handbook of Personality: Theory and Research*, 102–138.
- Kabat-Zinn, J. (2005). *Wherever You Go, There You Are: Mindfulness Meditation in Everyday Life*. Hyperion.
- Kabat-Zinn, J. (2015). Mindfulness. *Mindfulness*, 6(6), 1481–1483. <https://doi.org/10.1007/s12671-015-0456-x>
- Kaviani, H., & Hatami, N. (2016). Link between Mindfulness and Personality-Related Factors Including Empathy, Theory of Mind, Openness, Pro-social Behaviour and Suggestibility. *Clinical Depression*, 02(04). <https://doi.org/10.4172/2572-0791.1000119>
- Lopez, S. J., & Snyder, C. R. (2011). Positive Psychology: Past, Present, and Future. In *Oxford Handbook of Positive Psychology*. Oxford University Press, USA.
- McCullough, M. E., Emmons, R. A., & Tsang, J. (2002). The grateful disposition: A conceptual and empirical topography. *Journal of Personality and Social Psychology*, 82(1), 112–127. <https://doi.org/10.1037/0022-3514.82.1.112>
- Mirgain, S. (2016, September 1). *A Mindful Breathing Script*. US Department of Veteran Affairs. Retrieved July 28, 2022, from <https://www.va.gov/WHOLEHEALTHLIBRARY/docs/Script-Mindful-Breathing.pdf>
- Nixdorf, I., Frank, R., & Beckmann, J. (2015). An Explorative Study on Major Stressors and Its Connection to Depression and Chronic Stress among German Elite Athletes. *Advances in Physical Education*, 05(04), 255–262. <https://doi.org/10.4236/ape.2015.54030>
- Pavot, W., Diener, E., Colvin, C. R., & Sandvik, E. (1991). Further Validation of the Satisfaction With Life Scale: Evidence for the Cross-Method Convergence of Well-Being Measures. *Journal of Personality Assessment*, 57(1), 149–161. https://doi.org/10.1207/s15327752jpa5701_17
- Proctor, C., Linley, P. A., & Maltby, J. (2009). Youth Life Satisfaction: A Review of the Literature. *Journal of Happiness Studies*, 10(5), 583–630. <https://doi.org/10.1007/s10902-008-9110-9>
-



- Proctor, C., Tsukayama, E., Wood, A. M., Maltby, J., Eades, J. F., & Linley, P. A. (2011). Strengths Gym: The impact of a character strengths-based intervention on the life satisfaction and well-being of adolescents. *The Journal of Positive Psychology*, 6(5), 377–388. <https://doi.org/10.1080/17439760.2011.594079>
- Purcell, R., Gwyther, K., & Rice, S. M. (2019). Mental Health In Elite Athletes: Increased Awareness Requires An Early Intervention Framework to Respond to Athlete Needs. *Sports Medicine - Open*, 5(1). <https://doi.org/10.1186/s40798-019-0220-1>
- Rahmani, S., & Lavasani, M. G. (2012). Gender Differences in Five Factor Model of Personality and Sensation Seeking. *Procedia - Social and Behavioral Sciences*, 46, 2906–2911. <https://doi.org/10.1016/j.sbspro.2012.05.587>
- Reinboth, M., & Duda, J. L. (2004). The Motivational Climate, Perceived Ability, and Athletes' Psychological and Physical Well-Being. *Sport Psychologist*, 18(3), 237–251. <https://doi.org/10.1123/tsp.18.3.237>
- Ryan, R. M., & Deci, E. L. (2001). On Happiness and Human Potentials: A Review of Research on Hedonic and Eudaimonic Well-Being. *Annual Review of Psychology*, 52(1), 141–166. <https://doi.org/10.1146/annurev.psych.52.1.141>
- Santomier, J. (1983). The sport- stress connection. *Theory Into Practice*. <https://doi.org/10.1080/00405848309543038>
- Schueller, S. M. (2010). Preferences for positive psychology exercises. *The Journal of Positive Psychology*, 5(3), 192–203. <https://doi.org/10.1080/17439761003790948>
- Solomon, T., & Esmaili, B. (2020). Exploring the Relationship between Mindfulness and Personality to Improve Construction Safety and Work Performance. *Construction Research Congress 2020*. <https://doi.org/10.1061/9780784482872.051>
- Szcześniak, M., Rodzeń, W., Malinowska, A. B., & Kroplewski, Z. (2020). <p>Big Five Personality Traits and Gratitude: The Role of Emotional Intelligence</p><p>Psychology Research and Behavior Management, Volume 13, 977–988. <https://doi.org/10.2147/prbm.s268643>
- Tingaz, E. O., Solmaz, S., Ekiz, M. A., & Güvendi, B. (2021). The Relationship Between Mindfulness and Happiness in Student-Athletes: The Role of Self-Compassion—Mediator or Moderator? *Journal of Rational-emotive & Cognitive-behavior Therapy*, 40(1), 75–85. <https://doi.org/10.1007/s10942-021-00397-0>
- VA.gov / Veterans Affairs. (n.d.). https://www.patientcare.va.gov/Patient_Centered_Care.asp
- Veenhoven, R. (1996). The study of life-satisfaction. In *A comparative study of satisfaction with life in Europe*. Eötvös University Press. <http://hdl.handle.net/1765/16311>
-



Author Note

Dr. Sonia Kapur <https://orcid.org/0000-0002-2096-7441>

Moiez Salim Satyani <https://orcid.org/0009-0003-6113-7668>

There are no conflicts of interest to be disclosed.

Correspondence regarding this article should be addressed to Dr. Sonia Kapur, Guru Nanak Dev University, JRMG+J92, Chheharta Rd, Makka Singh Colony, Amritsar, Punjab 143005.