

Chapter II

Review of Literature

The review of the preceding studies performed in the associated area are of main prominence in any research to formulate an effective methodology. The literature concerning to present study “Effectiveness of Mindfulness Therapy in Managing Performance Anxiety and Enhancing Self-efficacy among Hockey Players” is examined and discussed on the basis of the following headings

- Performance Anxiety
- Mindfulness on Performance Anxiety
- Self-efficacy
- Mindfulness on Self-efficacy

Performance Anxiety

Patel, Omar and Terry (2010) analysed on Sport related Performance Anxiety among Female Athletes. It shows that the incidence of anxiety disorders in adolescence ranges from 6% to 20% and it was more prevalent in females. Athletes participating in sports experienced different levels of stress from competitive sports. For most young athletes (generally 13 to 24 years old, i.e., high school and college age group) sport participation was reported to be more stressful than many other activities of daily student or work life in general where competition is involved and performance is measured. Some level of sport related performance anxiety was considered to be normal and healthy; however, extreme anxiety in athletes can be detrimental in these performance situations. A number of factors may contribute to the development, severity and persistence of performance anxiety related to sport participation.

Papageorgi (202) examined the prevalence of music performance anxiety and factors affecting music performance anxiety levels in adolescent boys’ and girls’ musicians in the age groups of 12-15 and 16-19 years of Cypriot and British nationalities of 410 musicians were selected and administered by Young Musicians’ Performance Questionnaire includes the Adolescent Musicians’ Performance Anxiety Scale. Overall, 11% of participants experienced high levels of Musicians ‘Performance Anxiety (PA).

Anxiety was affected by the cultural context as group differences and different developmental trajectories were observed in the two nationalities. The study evidenced that performance anxiety related to music performance anxiety does exist at higher rate among female students than in male students. Therefore, performance anxiety was higher related with the gender of the individual however, the regression results shows that there were no significant predictors between gender and performance anxiety. Finally, this study shows that the designing cultural and personalised interventions could be more addressing in reducing the performance anxiety.

Blasco-Lafarga, Roldan, Cordellat and Monteagudo (2022) scrutinized on acute high intensity exercise reduces performance anxiety: A pilot study in wind musicians. Ten young students participated in the study with pre-post-performance-oriented concerts in one week. They were assessed using the Competitive State Anxiety Inventory-2R and physiological methods (heart rate variability). post comparison states that significant reduction in the level of anxiety was observed. Therefore, it is concluded stating that the improved musical performances have been detected.

Smith, Smoll, Cumming and Grossbard (2006) measured on multidimensional sport performance anxiety in children and adults: The Sport Anxiety Scale (SAS) using exploratory and confirmatory factor analyses stating 5-items subscales for somatic anxiety, worry and concentration. Wherein this scale predicted pre competition state anxiety and sensitive to anxiety reduction interventions directed at youth sport coaches and parents.

Doman, Sinclair and Connor (2022) investigated on the acute effect of various feedback approaches on sprint performance, motivation, and affective mood states in highly trained female athletes: a randomized crossover trial for about 12 rugby league players who completed all feedback conditions. Participants completed a 20m sprint (maximum sprint), 30m curved agility sprint, and a repeated sprint ability test, with sprint times, motivation level, and mood states recorded. The participants were blinded from the number of trials during the repeated sprint ability test. The study focused on the effects of varying feedback towards sprint performances which had a higher level of relationship with the anxiety involves in poor performance of the athletes. The results throwed light in understanding that sprint performances were faster in augmented feedback and

competition driven drill feedback. Thus, it shows that augmented feedback prior to sprint tasks it helps to improve immediate physical performance and motivation, also enhances more immediate performance outcomes resulting reduced level of performance anxiety.

Hatachi, Aoki and Kato (2019) explored on report of psychological competitive ability of Rugby Players in each unit who belong to companies. This is a comparative study between members and non-members as a team and units between elite rugby players and collegiate athletes of Japan. The results showed that the members' scores of "Judgments" and "Strategic ability" were higher than the non-members' scores. The comparison with the collegiate players indicated that the elite players' scores of "Self-controls", "Ability to relax", "Concentration", and "Mental stability and concentration" were higher than the collegiate players' score as well as the collegiate players' scores of "Volition for winning" and "Volition for competition" were higher than the elite players' scores. These results suggested that rugby players need decision making skills in the game situations and these psychological skills such as "Judgment" and "Strategic ability" are important in selection criteria of members and coaching guidelines even for the players who belong to companies.

Mellalieu, Neil and Hanton (2006) analysed the differences of mental skills in superior basketball players and gymnasts with different levels of experiences. This study sought to investigate the influence of demographic factors (age, experience, position), anxiety and self-confidence on penalty kick performance among 30 registered players of Ebusua Dwarfs players in the Ghana Premier League. A quantitative descriptive survey design was used and the data was analysed using One Way Mixed Repeated Measures ANOVA and Multiple Regression. Findings revealed that no interaction effect between age, experience and position and changes in anxiety and self-confidence levels on penalty kicks.

Carre, Muir, Belanger and Putnam (2006) examined on pre competition hormonal and psychological levels of elite hockey players: relationship to the "home advantage". This study investigated the pre competition physiological and psychological states of hockey players in the home and away venues. Psychological measures indicated that the players were more self-confident in playing in their home venue and had higher somatic and cognitive anxiety when playing in their opponent's venue. It was evident that there are

differences in pre competition hormonal and psychological states that may play a key role in the home advantage.

Bray and Martin (2003) observed the effects of competition location on individual athlete performance psychological states. A sample of 26 Junior alpine skiers completed the Competitive State Anxiety Inventory-2 approximately one-half hour prior to competitions that were held at home and away. Within subjects' design to examine athletes' performance and pre competition psychological states at home and away competitions. It focused on the skiers would display reduced level of state anxiety in comparing with other locations. Wherein, self reports of state anxiety were expected to be lower and self-confidence higher prior to home races compared to away. Results showed that athlete's perspective in competing individual sports and highlight the need for further research on the association between game location and competitors' psychological states.

Hanton, Mellalieu and Hall (2002) inspected on self-confidence and anxiety interpretation: a qualitative investigation. Semi-structured interviews were conducted with 10 elite performers to determine how self-confidence levels influenced the perceived effects of pre competitive anxiety intensity and identify the confidence management strategies used to protect symptom interpretation. The results showed that two causal networks were identified, displaying self-confidence to influence the relationship between competitive anxiety intensity and symptom interpretation. In the absence of self-confidence, resulting increased level of anxiety intensity. To cope better, the participants were taught the strategies of mental rehearsal, thought stopping and positive self-talk. The study highlighted the role of directional interpretations in the experience of complete state of anxiety symptoms in sports that require high level of perceptual anxiety.

Callow and Waters (2005) analysed the effect of kinaesthetic imagery on the sport confidence of flat-race horse jockeys. A multiple-baseline across participants research design was employed. Three male professional flat race horse jockeys (Mean age=29.00 years, SD=8.19) participated in this study. At the start of the study, two of the jockeys were professional (Mean years as professional=17.50) and one was an apprentice. Apprentices ride in the same races as professional jockeys. It emphasised on the efficacy of a kinaesthetic imagery intervention on the sport confidence of three professional flat

racehorse jockey and the relationship between performance and sport confidence. The results showed that the value of kinaesthetic imagery as a tool for athletes to practice and develop sport confidence.

Dilipkumar, Hatim and Marisa (2010) prevalence of anxiety disorders in adolescents range from 6% to 20%, and it is much higher for anxiety symptoms not meeting criteria for a specific anxiety disorder. The level of anxiety prevalence rate was much higher in females. Athletes participating in sports experience different levels of stress from competitive sports. Some level of sport related performance anxiety was normal and healthy; however, extreme anxiety in athletes could hamper their performance situations. Several factors may contribute to the development, severity and persistence of performance anxiety related to sport participation.

Mottaghi, Atarodi and Rohani (2013) assessed the relationship between coaches' and athletes' competitive anxiety and their performance. The study population consisted of 540 players and 60 coaches from 60 futsal teams (5 main players, 4 reserves, and 1 coach for each team). All the players and the coaches were surveyed in a census method and no sampling was done. The results showed a positive significant relationship between the coaches' anxiety level and sport competition anxiety level in the athletes ($p = 0.019$, $r = 0.56$). There was a negative significant relationship between the coaches' anxiety level and performance level of the athletes ($p = 0.012$, $r = -0.80$). Coaches and officials should consider sport competition anxiety among athletes before and during competitions. Formal and planned competitions, training sessions and preparation practices can be a major factor assisting to decrease athletes' anxiety.

Ruchi (2014) conducted a study on personality, spiritual exercise and cognitive behavioural interventions in enhancing sports performance. It provides a clear information on how much sports are important in life and also provided suggestions to improve the quality of sports performance through spiritual exercises (i.e. yoga, meditation) and some cognitive behavioural techniques (positive self talk, relaxation and visualization).

Birrer and Morgan (2010) formulated a comprehensive review of psychological skills training in elite sports. The reviewed literature showed a lack of convincing

evidence and theoretical underpinning concerning traditional psychological skills to enhance performance in High intensity sports. Therefore, a model with three conceptual levels (psychological demands, skills and techniques) was presented. The model facilitates the identification of the psychological demands of a specific sport, which in turn enables distinguishing which psychological skills are required. This allows an expert to choose psychological techniques to improve the athlete's psychological skill. Considerations based on the model and the limited related literature available revealed self-skills, personal development and life skills, arousal regulation skills, volitional skills, motivational skills and recovery skills as the most important skills to address to enhance performance.

Kellman (2010) investigated on preventing overtraining in athletes in high intensity sports and stress/recovery monitoring. Study focused on the new methods adopted in training to improve the performance of the athletes. Results in consistently faced barriers, including overtraining, increased anxiety, fatigue, injury, illness and burnout. The study concluded that preventing overtraining will improve the performance of the athletes especially in reducing performance anxiety and lower the stress.

Mehta (2019) examined on anxiety and achievement motivation among the sports persons of the different sports. The data was collected from the students of sports academy of Gujarat during the years 2018-2019. The tools Competitive Sports Anxiety questionnaire and sports achievement questionnaire were administered to each athlete one day prior to the competition. Two Way Analysis of Variance was used as the statistical analysis and the level of significance was observed in F-value and Scheffe's Post-hoc test. The results showed that significant gender differences were evident in case of sports.

Devi and Jothi (2015) analysed on anxiety, aggression and team cohesion among volleyball and football men players. They selected 30 players, consisting of 15 volleyball and 15 football men players. The subjects were randomly selected from players who participated in Intercollegiate Tournament from Y.M.C.A. College of physical education Chennai. The selected subjects' age ranges from 18 to 26 years. The selected psychological variables were anxiety (Spielberger), aggression (Buss & Perry, 1992) and team cohesion of Group Environment Questionnaire (Carron, Brawley & Widmeyer, 1985). The data were analysed by independent 't' ratio was used to test for the difference

between the group mean. The results proved that there was no significant difference on anxiety, aggression and team cohesion between football men and volleyball men.

Razeena (2013) investigated to quantify the level of anxiety among 113 national level female hockey players of India. They were administered by Competitive State Anxiety Test – II was used to collect the data on players' cognitive and somatic anxieties and self-confidence. Mean, standard deviation and analysis of variance were calculated and the results proved that the players were high in their cognitive anxiety, somatic anxiety and self-confidence as per the norms and no significant difference exist among the players according to their position.

Ransdell and Murray (2011) conducted a study on 23 elite female ice hockey players to describe the physical characteristics who were trying out for the 2010 US Women's Ice Hockey team. They were evaluated for body mass, height, age, vertical jump, standing long jump, 1RM (One Repetition Maximum) front squat, front squat relative to body mass, 1RM (One Repetition Maximum) bench press, bench press relative to body mass, pull ups, and body composition. The selected athletes were 24.7 years of age from the USA. Data should assist strength and conditioning coaches in identifying talent, testing for strengths and weaknesses, comparing future teams to these indicators, and designing programmes that will enhance the performance capabilities of female ice hockey athletes.

Competitive anxiety in young athletes: differentiating somatic anxiety, worry and concentration disruption study was examined by Grossbard, Smith, Smoll, Cumming (2009). Confirmatory factor analyses with a sample of 9- to 14-year-old athletes (N=1038) supported the viability of a three-factor model of anxiety involving somatic anxiety, worry and concentration disruption previously demonstrated in high school and college samples. The results showed that there was an increased level of competitive anxiety and higher the level of performance anxiety was observed among the female athletes. However, in older athletes, the performance anxiety was comparatively less. Wherein, among male athletes, the level of concentration disruption was highly observed. It is to be noted that emotional implications and mindfulness were the areas to be concentrated at highly important aspects.

Bhagirathi (2008) explored on 10 girl hockey goal keepers from different schools of Madhya Pradesh, India, in the age range of 14 to 19 years. To determine the relationship of anxiety and achievement motivation to goal keeping among girl hockey players. Findings of the study revealed that significant relationship of state anxiety and trait anxiety to goal keeping performance was observed for state (0.90) and trait anxiety (0.84) while no significant association with achievement motivation was found.

Vadova, Hall and Mortiz (2008) studied on the relationship between competitive anxiety and imagery use among 57 junior North American Roller-Skating Championship competitors completed the revised Movement Imagery Questionnaire (MIQ-R), the Sport Imagery Questionnaire (SIQ), and the Competitive State Anxiety Inventory – 2 (CSAI-2). Results from stepwise multiple regression analyses revealed that visual imagery ability and motivational arousal imagery to be predictors of cognitive state anxiety. Visual imagery ability also predicted somatic state anxiety. While motivational mastery imagery was a predictor of self-confidence. With respect to the relationship between imagery use and imagery ability, high imagery ability was associated with higher imagery use. Finally, self-confidence and kinaesthetic imagery ability scores correctly classified a majority of the subjects as medallists versus non-medallists. The results suggested that imagery can be used to help control competitive anxiety levels and enhance self-confidence.

Abrahamsen, Roberts and Pensgaard (2006) explored the factorial structure of the Norwegian version of the sports anxiety scale was to assess the multidimensional sports performance trait anxiety among the athletes. This scale consists of three unique dimensions measuring somatic anxiety, worry and concentration disruption. A total of 282 participants were assessed using sport anxiety scale and identified the level of sports anxiety. The findings were similar to those of the English original, and lend support for the use of this instrument with Norwegian athlete subjects.

Woodman and Hardy (2003) examined on the relative impact of cognitive anxiety and self-confidence upon sport performance: a meta-analysis. Forty-eight participants assessed on cognitive anxiety with performance anxiety and self-confidence with performance in Norway. A paired-sample t-test was performed to identify the magnitude of the self-confidence mean affect size was significantly greater than that of cognitive

anxiety performance. The results revealed that men score higher standard competition were significantly greater in men than in women.

Smith and Smoll (1990) studied on sports performance anxiety. The role of anxiety in sport has been a topic of great interest to coaches, athletes, and researchers for many years. The fact that emotional and motivational factors can cause one athlete to “peak” in the crucible of competition while another falters or “chokes” is evident to anyone who has watched or participated in sports. Coaches speak of “Wednesday All Americans” who cannot perform up their capabilities on Saturday game days because of debilitating effects of anxiety. Conversely, coaches and athletes sometimes express the view that anxiety facilitates performance.

Mindfulness on Performance Anxiety

Timothy, Carol and Keith (2014) reviewed on mindfulness in sport performances. This article paid more attention towards Mindful Sport Performance Enhancement (MSPE) developed by Kaufman and Glass (2006). Then, the associations between mindfulness and four important sport performance-related variables (flow; attention, affect and certain physiological factors) was examined, and their empirical and theoretical connections with Eastern Mindfulness (EM) and Langer’s Mindfulness (LM) was presented. These discussions made attempt to illuminate points of integration and divergence between the two conceptualizations of mindfulness, in an effort to create a more comprehensive understanding of the multifaceted role of mindfulness in sport performance enhancement.

Diaz (2018) conducted a study on relationships among meditation, perfectionism, mindfulness and performance anxiety among 255 collegiate music students and they were assessed by using Music Performance Anxiety scale when controlling for trait perfectionism and trait mindfulness. Findings indicated that approximately 48% of the participants had engaged in meditation during the past 6 months and, that holding mindfulness and perfectionist traits constant, participants who meditated at least weekly tended to report less Music Performance Anxiety. However, higher trait of mindfulness predicted lower the level of performance anxiety.

Lyon and Plisco (2018) analysed the effects of self-compassion and mindfulness on performance anxiety and flow in elite athletes. The predictive value of self-compassion among elite athletes, hypothesizing that higher levels of self-compassion would predict increased levels of flow and decreased levels of performance anxiety. The unique contribution was that self-compassion significantly predicted athletes' level of flow, above and beyond the predictive value of mindfulness. Together, mindfulness and self-compassion explained 27% of the variance in athletes' experience of flow.

Bühlmayer, Röthlin, Faude and Donath (2017) conducted a study on effects of mindfulness practice on performance relevant parameters and performance outcomes in sports: a meta-analytical review. Nine trials of fair study quality with 290 healthy sportive participants with their age range of 15 years were examined with their physiological and psychological performances (athletics, cyclists, dart throwers, hammer throwers, hockey players, hurdlers, judo fighters, rugby players, middle-distance runners, long distance runners, shooters, sprinters, volleyball players) were included. Time duration for Intervention varied from 4 weeks to over 2 years. The findings revealed that Mindfulness practice consistently and beneficially modulates mindfulness scores. Furthermore, physiological and psychological surrogates improved to a meaningful extent following mindfulness practice, as well as performance outcomes in shooting and dart throwing. From this review-based study it is evident that mindfulness practice strategies as a regular complementary mental skills training approaches for athletes, at least in precision sports.

Evaluation of Mindful Sport Performance Enhancement: a new approach to promote flow in athletes was investigated by Kaufman, Glass and Arnkff (2009). The study was conducted for a duration of 4 weeks programme, affected flow states, performance and psychological characteristics of 11 archers and 21 golfers from the community. Participants completed trait measures of anxiety, perfectionism, thought disruption, confidence, mindfulness and flow. They additionally provided data on their performances and state levels of mindfulness and flow. Analyses revealed that some significant changes in dimensions of the trait variables occurred during the training. Levels of state flow attained by the athletes also increased between the first and final sessions. The findings suggested that Mindful Sport Performance Enhancement is a promising intervention to enhance flow, mindfulness and aspects of sport confidence.

Corbally, Wilkinson and Fotherhill (2020) examined on effects of mindfulness practice on performance and factors related to performance in long distance running: a systematic review. The study deals with the aspects of fatigue, boredom, pain, performance anxiety and negative thoughts which plays a major role affecting each athlete's mental mindset. This article was focused on reviewing mindfulness interventions on performance and performance-based factors in long distance running, assessing mindfulness scores, physiological performance related factors, psychological performance related factors and performance outcomes. Therefore, mindfulness intervention therapies proved to be resulted in reduced the level of performance anxiety and played an important role in bringing up a desired level of performance among athletes.

Scott-Hamilton, Schutte and Brown (2016) explored the effects of mindfulness intervention on sports anxiety, pessimism and flow in 27 competitive cyclists and they were assigned to an 8-week mindfulness intervention, which incorporated a mindful spin bike training component. Participants completed the baseline and post-test measures of mindfulness, flow sport anxiety and sport related pessimistic attributions. Analyses of covariance showed significant positive effects on mindfulness, flow and pessimism for the 27 cyclists in the mindfulness intervention condition compared with the 20 cyclists in the control condition. Changes in mindfulness experienced by the intervention participants were positively associated with changes in flow. However, the results suggest that mindfulness-based interventions tailored to specific athletics pursuits can be effective in facilitating flow experiences.

Since the concept and application of mindfulness-based acceptance-based practise models in sport to improve performance and general well-being of athletes and performers, these cutting edge theoretical and Practice models have significantly expanded the knowledge base and been successfully incorporated into sport and performance practice domains globally (Gardner & Moore, 2017).

Amemiya and Sakairi (2019) investigated on role of mindfulness in performance and mental health among Japanese athletes: an examination of the relationship between alexithymia tendencies, burnout and performance. Participants were 125 university athletes (74 men, 50 women, 1 unknown gender; mean age: 19.84 years, SD = 1.04) who completed a survey comprising the Athlete Mindfulness Questionnaire, Sport Alexithymia

Scale, Burnout Scale for University Athletes and Psychological Performance Efficacy Scale (on which they assessed both themselves and a teammate) at three time points separated by two months intervals. Mindfulness was also positively and directly associated with self-evaluation of performance and indirectly positively associated with performance as evaluated by a teammate, via burnout. Structural equation modelling showed that the hypothesized model represented an acceptable fit to the data, based on several indices. The findings suggested that mindfulness may help to enhance performance and reduce future burnout among athletes.

Pineau, Glass, Kaufman and Minkler (2019) examined from losing record to championship: a case study of mindful sport performance enhancement. Mindful Sport Performance Enhancement is one of the leading mindfulness based mental training programmes for athletes and coaches. Detailed case study of work with a division III women's lacrosse team over a 2+ year period is presented, highlighting the adaptability of mindful sport performance enhancement when working within collegiate settings. It is evident that mindfulness enhances the sport performance.

Mistretta, Glass, Spears, Perskaudas, Kaufman and Hoyer (2017) scrutinized on collegiate athletes' expectations and experiences with mindful sport performance enhancement. A total of 6 sessions of mindful sport performance enhancement training with 45 mixed sport collegiate athletes reported what they hoped and expected to get from the training and responded afterward to open ended questions about their experiences. Participants' responses were coded for themes, with high interrater reliability. Athletes initially hoped to gain psychological benefits in both sport and everyday life, such as relaxation and less stress or anxiety, better emotion regulation, mental toughness and self-awareness, as well as sport performance improvement. Participants also provided constructive feedback and recommendations for future mindful sport performance enhancement training. Overall, they found Mindful Sport Performance enhancement to be a positive experience and reported many of the same benefits that they expected.

Self-efficacy

Brown, Malouff and Schutte (2005) explored on the effectiveness of a self-efficacy intervention for helping adolescents cope with sport-competition loss. The study involved with 111 adolescent netball and soccer participants, who completed their positive affect

scale prior to the competition. Defeated participants were randomly assigned to the controlled groups. Intervention participants were asked to choose one or more of the six thoughts related to self-efficacy and apply these to themselves before both groups again completed the positive affect scale. Control group participants showed less positive affect after a loss than the intervention group. The results provided support for the self-efficacy theory as applied to helping individuals cope with competition loss.

Chase (1998) examined children's and adolescents' selection of sources of self-efficacy in physical education and sport, and age-related differences in the sources. Twenty-four children, ages 8 to 14 years, were individually interviewed to learn which sources they utilized to form their beliefs that they could be successful during physical education and sport. Using an inductive content analysis (Patton, 1990), the data were separated into three age groups: 8 to 9 years, 10 to 12 years, and 13 to 14 years. Results indicated that age related differences did occur in the selection of sources of self-efficacy. Performance was an important source for all ages. However, younger children named participation and subjective measures of success important, whereas, older children named practice hard to improve, comparisons with others and objective measures of success important. Praise and encouragement from significant others remained important for all ages, with peers and coaches becoming more important with age.

Mortiz, Feltz, Fahrback and Mack (2000) scrutinized the relationship between self-efficacy and performance in sport. Based on 45 studies (102 correlations), the average correlation between self-efficacy and sport performance was 0.38. A heterogeneity of findings, follow-up univariate and multivariate moderator analyses were conducted. Results indicated that the most important moderator was concordance, thereby highlighting the importance of matching the self-efficacy and performance measures. Additional moderators were examined included the types of self-efficacy measures, the types of performance measures, the nature of the task and the time of assessments. These variables accounted for approximately 44% of the variance in the self-efficacy performance relationship.

Martin and Gill (1991) conducted a study on the relationships among competitive orientation, sport confidence, self-efficacy, anxiety and performance. The participants

were male high school distance runners were assessed using Sport Orientation Questionnaire (SOQ), the Competitive Orientation Inventory (COI), the Trait Sport Confidence Inventory (TSCI), the State Sport Confidence Inventory (SSCI), the Competitive State Anxiety Inventory (CSAI) and Separate self-efficacy Scale for Performance (time) and outcome (place). The results revealed that the self-efficacy was a stronger predictor. Finally, familiar and small competitive field may have allowed the athletes to form accurate outcomes of self-efficacy judgment.

Hepler and Feltz (2012) studied on take the first heuristic, self-efficacy and decision making in sport. Seventy-two undergraduate and graduate students who performed 13 trials in each of two video-based basketball decision tasks. One task required participants to verbally generate options before making a final decision on what to do next, while the other task simply asked participants to make a decision regarding the next move as quickly as possible. Decision making self-efficacy was assessed using 10 items questionnaire comprising various aspects of decision making in basketball. Participants also rated their confidence in the final decision. Results supported many of the tenets of the take the first heuristic, such that people used the heuristic on a majority of the trials (70%), earlier generated options were better than later ones, first options were meaningfully generated and final options were meaningfully selected. Participants with higher self-efficacy beliefs used take the first more frequently and generated fewer options than those with low self-efficacy. Thus, not only is take the first an important heuristic when making decisions in dynamic, time pressure situations, but self-efficacy plays an influential role in take the first.

Cathy, Deborah and Michael (2016) explored the self-efficacy of sport officials which revealed that majority of the researches conducted were on decision making wherein psychological skills of athletes received a tremendous amount of attention from sport researchers. Self-efficacy plays a crucial role among athlete officials to improve their sport performance and enhance sport outcomes.

Samson and Solmon (2011) examined the sources of self-efficacy for physical activity within the sport and exercise domains. Self-efficacy theory is the most prominent sub theory stemming from Bandura's Social Cognitive Theory (1986). The theory posits

that people will be more likely to engage in behaviours they believe they can successfully perform and avoid behaviours in which they feel they will be unsuccessful. Self-efficacy perceptions help to shape individuals' efforts, affective experiences and enjoyment of physical activities, particularly at higher intensities. This literature articles revealed that self-efficacy was observed high for athletes performing increased physical activity within the sport and exercise domain.

Lane, Hall and Lane (2007) discovered on the predictive paths between performance accomplishments, self-efficacy and performance among sports studies students taking level 1 statistic module. Fifty-eight Level 1 Sport Studies undergraduate degree students completed a 44 item self- efficacy measure and an assessment of perceived academic success at the start of the module. Self- assessed worksheets taken in weeks 4 and 5 were used as a second performance measure. Self- efficacy was reassessed in week 7 and students handed the assignment for the module in week 8. Path analysis results using structural equation modelling indicated that perceived academic success was associated with the first self- efficacy measure, which in turn predicted worksheet success and the two self- efficacy measures correlated. The self- efficacy measure predicted module performance and importantly showed the strongest relationship of all predictor variables.

Haney and Long (1995) examined on coping effectiveness: a path analysis of self-efficacy, control, coping and performance in sports competitions. A total of 178 female athletes aged from 16 to 28 years were studied over 2 rounds of a sport event. Path analysis (LISREL VI) revealed that higher levels of self-efficacy and control appraisals were associated with better performance. Performance and performance satisfaction in Round 1 influenced appraisals and coping during the second performance. In addition, control appraisal was associated with disengagement coping, and both engagement and disengagement coping were related to performance and performance satisfaction.

Chase (2000) observed children's self-efficacy, motivational intentions and attributions in physical education and sport. Two hundred and eighty-nine children in the age range of 8 to 14 years were assigned to either high or low self-efficacy groups, and measures of intended effort, persistence, choice, future self-efficacy and attributions for

failure were collected following a failure scenario. Results indicated that children with higher self-efficacy chose to participate and had higher future self-efficacy scores than those with lower self-efficacy. Higher efficacy children attributed failure to lack of effort, whereas, those with lower efficacy attributed failure to lack of ability. Age related differences were also found with choice to participate, effort and future self-efficacy.

Andrew, Tracey, Karen and Laura (2003) assessed the self-efficacy and dissertation performance among 60 sports Level 3 students. Qualitative results identified that self-efficacy was conceptualised in six themes such as maintaining motivation, planning, obtaining support, understanding theory, organising time and effectively writing the dissertation. These themes were developed into 30 items questionnaire using the same approach as Lane, Hall and Lane (2002). Participants completed the self-efficacy inventory six weeks before the dissertation submission date. Results indicated that Self-efficacy toward obtaining support ($r = 0.30, p < 0.05$), understanding theory ($r = 0.35, p < 0.05$), and writing skills ($r = 0.30, p < 0.05$) were associated with good grades. The sum of self-efficacy factors significantly correlated with performance ($r = 0.27, p < 0.05$). Discriminant function analysis results indicated that 80% of failing students could be correctly classified from self-efficacy scores. Findings lend support to previous research that shows self-efficacy can significantly predict academic performance

Saville and Bray (2016) studied on athlete's perceptions of coaching behaviour, relation inferred self-efficacy and self-efficacy in youth sport. This study implies that athlete's perception of how coaches view their abilities stem from their verbal and nonverbal interactions. A total participant of 277 hockey players were taken part in phase I and phase II. The results indicated that there is a positive correlation in all the variables was observed.

Mouloud, Fonseca and Abdelkader (2015) investigated self-efficacy among collective games players. The research group consists of 65 male undergraduate students. The research was used the self-efficacy scale. Results indicated that student players obtained high level of self-efficacy, while no significant difference was observed among student-players. Thus, students who were taken into the self-efficacy programme scored higher the level of self-efficacy.

Miller, Carlyle and Pease (1992) conducted research on the relationship between motivation and self-efficacy in competitive athletes participating in swimming, ice hockey and basketball. The swimming study was conducted involving 84 male and female participants, wherein a total of 106 skilled male ice hockey athletes and 10 basketball players participated in the study. The data analysis produced inconclusive results however, a positive Pearson product-moment correlations obtained in swimming study and hockey study were significant. The findings of the study shows that there is higher level of relationship exists between self-efficacy and motivation and it is possible between these factors is considerably more elusive.

Mouloud and Elkader (2017) examined on self-efficacy among football players between 16 to 19 years. The sample consists of male amateur football players, totally 61 participants between the age range of 16 to 19 years. General Self-efficacy Scale-Schwarzer (GSES) was used to collect data. Descriptive statistics and Kruskal Wallis test were applied in order to evaluate data. The results indicated that there was high self-efficacy among football players.

Sirianni (2023) studied on the specialization of informal social control in a selective community: fighting in the national hockey league from 1947 to 2019. This article quantitatively examined the phenomenon in the case of professional ice hockey, a highly selective community where fist fighting between players. An empirical examination of over 70 years of player statistics and play by play data from the National Hockey League shows not only the evolution of this system from one of peer sanctioning to one of specialized sanctioning, as might be predicted from experimental results showing the favourability and efficacy of more centralized punishment regimes, but also reveals how specialization has led to self-serving sanctions.

Mercader-Rubio, Angel, Silva and Brito-Costa (2023) studied on levels of somatic anxiety, cognitive anxiety and self-efficacy in university athletes from a Spanish Public University and their relationship with basic psychological needs. One hundred and sixty-five university students enrolled in courses related to physical activity and sport sciences, with a mean age of 20.33 years ($SD = 3.44$), studying in a Spanish public university located in Almeria, in the southeast of Spain (Andalusia). The main findings showed the

existence of a continuous and effective relationship between self-efficacy and basic psychological needs. Therefore, the results obtained showed that a more positive form of motivation would be autonomous motivation, as it helps to interpret the perception of self-efficacy, favouring performance in competition, whereas controlled motivation has the opposite effect.

Carpenter, Lininger and Craig (2020) inspected on intrapersonal factors affecting concussion reporting behaviours according to the theory of planned behaviour in high school football players. A convenience sample of 40 high school football players (age: 15.6 ± 1.0 years) who played during the fall 2017 season and had not been diagnosed with a sports related concussion two weeks prior to data collection completed a previously validated questionnaire. Of these, 58% were underclassmen and 65% were skill players. An ordinal regression was used to analyze the association between the intention to report and four variables (attitudes of reporting, reporting self-efficacy, symptoms and behaviour, subjective norms, and concussion knowledge). Before data collection, it was hypothesized that these factors could be used to form a model to determine the athletes' intention to report, which can then be related to their reporting behaviour. Self-efficacy was the only Theory of Planned Behaviour (TPB) variable significantly associated with reporting intention. Reporting self-efficacy was significantly associated with intention to report, where participants with a high self-efficacy score were 3.15 times more.

Ditmars and Sarah (2013) observed the relationship between self-efficacy, collective efficacy and sport performance in men's women's ice hockey goal tender teams. Data was collected from 12 goal tenders from 3 Ontario hockey leagues. Efficacy was measured through an online questionnaire and official game statistics provided the performance measures. Data was collected for 70 games to total of 112 responses. Results revealed non-significant relationships between both self and collective efficacy and all performance indicators. This study concluded that it is possible that goal tender efficacy is not the most influential psychological constructs.

Hepler and Feltz (2013) analysed on path analysis examining self-efficacy and decision-making performance on a simulated basketball task. Undergraduate students ($N = 78$) performed 10 trials of decision-making task in baseball. Self-efficacy was measured

before performing each trial. Decision making performance was assessed by decision speed and decision accuracy. Path analyses examined the relationships between self-efficacy, revisualized past performance and current performance. The results indicated that self-efficacy was a significant and consistent predictor of decision speed (eight of nine trials), but not decision accuracy (four of nine trials). It was also found that experience does not have a meaningful effect on the relationship between self-efficacy and decision-making performance in sport.

Feilce and Powell (2021) observed that self-efficacy of female youth athletes in an intensive training camp. Female adolescents were surveyed on their sport-specific self-efficacy and endorsed sources of their self-efficacy before (n=153) and after (n=71) a sport-specific intensive training camp. The results revealed that adolescent-aged athletes' perceptions of their sport-specific self-efficacy was higher post camp than pre camp.

Kroshus, Baugh, Daneshvar and Viswanath (2014) explored on understanding concussion reporting using a model based on the theory of planned behaviour. The Participants were members of an American Tier III Junior A ice hockey league (ages 18–21 years; male; n = 256). Twelve of 14 league teams and 97% of players within these teams agreed to participate. Written survey items assessed symptom reporting behaviour, intention, perceived norms, self-efficacy, perceived outcomes of reporting, and concussion knowledge. Structural equation modelling was used to assess the significance of relationships hypothesized by the TPB based model and the overall model fit. Results supported the fit of the TPB based model in explaining reporting behaviour; all model pathways were significant in the hypothesized direction. Of the perceived reporting outcomes assessed, those related to athletic performance were identified as most strongly associated with reporting intention. Results suggested the importance of considering factors such as perceived outcomes of reporting, perceived norms and self-efficacy, in addition to knowledge,

Mindfulness and Self-efficacy

Belcharz, Luszczynska, Scholz, Schwarzer and Cieslak (2013) explored on predicting performance and performance satisfaction: mindfulness and beliefs about the ability to deal with social barriers in sport. Participants were football (soccer) players aged

16 to 21 years (Study 1: $N = 30$; Study 2: $N = 101$, longitudinal sample: $n = 88$). Study 1 resulted in eliciting 82 social barriers referring to team, peer leadership, and coaches. Study 2 showed that task related self-efficacy and collective efficacy explained performance satisfaction at seven-month follow-up, whereas self-efficacy referring to social barriers explained shooting performance at seven-month follow-up. Indirect associations between mindfulness and performance were found with three types of self-efficacy referring to social barriers, operating as parallel mediators. Results provide evidence for the role of beliefs about the ability to cope with social barriers and show a complex interplay between different types of self-efficacy and collective efficacy in predicting team sport performance.

A study examined the relationship between mindfulness, self-efficacy and athletic performance in a diverse sample of collegiate and professional athletes ($N = 121$). The selected participants were administered by Mindfulness Attention Awareness Scale, the General Self-efficacy Scale, the Athletic Subjective Performance Scale and a demographic questionnaire were administered in an online format. The results revealed a significant relationship between types of athletes and self-efficacy, as well as athletic performance. Furthermore, the results also showed a significant difference between gender and self-efficacy. Athletes will typically face challenges that may have an impact on their performance. Therefore, practicing mindfulness along with self-efficacy will enhance athletic performance (Sean, 2023).

Pineau, Glass, Kaufman and Bernal (2024) investigated on self and team efficacy beliefs of rowers and their relation to mindfulness and flow. Fifty-eight rowers from nine teams completed sport specific measures of self and team efficacy, along with questionnaires assessing mindfulness, flow, sport anxiety, and sport confidence. self and team efficacy were significantly related to mindfulness, dispositional flow, and sport confidence. In addition, both self-efficacy and sport confidence mediated the association between both total mindfulness (and the describe dimension of mindfulness) and the challenge-skill balance dimension of flow. These results provide indirect support for a proposed model, which suggests that mindfulness may positively impact the integral challenge-skill balance aspect of flow in athletes through self-efficacy.

Bagheri and Dana (2021) examined the effect of mindfulness protocol on anxiety, self-efficacy and performance of athletes. The present study was a semi experimental with design two groups of pre and post-test with control group. Of all male shooters in Gorgan, in 2012, 30 shooters ranged in age from 19 to 30 years, randomly assigned to two groups of 15. The training programme included six sessions of 75 to 90 minutes of Mindfulness / Control, and the state competitive anxiety inventory, general Self-efficacy and performance scale in shooting were used for evaluation, and data were analysed using Analysis of Covariance and Multivariate Analysis of Covariance. The results showed that the intervention of mindfulness reduced anxiety and increased self-efficacy and its components (desire to initiate behaviour, desire to expand the effort, encounter obstacles) and improve exercise performance. According to the findings of this study, mindfulness interventions are one of the effective methods for improving athletes' performance.

Zarei and Hoseini (2018) studied on the effectiveness of mindfulness-based therapy on job stress and job self-efficacy of physical education instructors. The statistical population included all physical education instructors in swimming, volleyball and basketball in Qom Department of Physical Education. In this pre and post-test experimental research with control group, 30 instructors were selected through convenience sampling method and randomly divided into experimental group and control group. The experimental group underwent eight sessions of mindfulness-based therapy programme and the control group did not receive any intervention. Data were collected using Job Stress Questionnaire and self-efficacy Questionnaires. Collected data were analysed using covariance analysis. The results showed significant difference in job stress and job self-efficacy between the experimental and control groups after the intervention. Therefore, using mindfulness-based therapy techniques is effective in reducing job stress and increasing job self-efficacy among physical education instructors.

Neace, Hicks, DeCaro and Salmon (2022) inspected on trait mindfulness and intrinsic exercise motivation uniquely contribute to exercise self-efficacy. Undergraduate students ($N = 188$) were recruited from the psychology participant pool in Fall 2017. Participants completed an online survey assessing trait mindfulness, exercise motivation, exercise self-efficacy and demographic information. Hierarchical regression analyses revealed positive associations between intrinsic and extrinsic exercise motivation and

exercise self-efficacy, mindfulness and intrinsic exercise motivation, and mindfulness and exercise self-efficacy. The latter relationship was partially mediated by intrinsic exercise motivation. Extrinsic exercise motivation was not associated with mindfulness. The study concluded that both mindfulness and intrinsic exercise motivation independently predict exercise self-efficacy, suggesting that mindfulness may uniquely contribute to positive health behaviours in college students.

Firth, Cavallini, Sütterlin and Lugo (2022) examined on mindfulness and self-efficacy in pain perception, stress and academic performance. The influence of mindfulness on cognitive processes. A three-part study was conducted on 92 university students to test the relationship between mindfulness, self-efficacy and well-being factors, alongside academic performance. Part one involved data collection one month prior to an experiment where trait scores for all factors were used to check pain and well-being behaviours. Part two consisted of participant randomization into three intervention groups (control, sham, mindfulness) and then an exposure to a fear induction task followed by cognitive tasks. The third part consisted of investigating the effect of a short mindfulness intervention on self-efficacy, pain and well-being in students. The results indicated that self-efficacy had a positive effect on well-being factors (study 1 & 3) and in the experiment (study 2). Self-efficacy influenced pain intensity and pain unpleasantness and significantly predicted academic performance. Mindfulness had mixed results in how it influenced self-efficacy. While it influenced well-being and lowered stress (study 1 & 2) in the long term, the mindfulness intervention significantly decreased pain intensity.

Richards (2018) conducted a study among Kentukian middle school students' self-efficacy and their participation in physical sports: a correlation study. A convenient sample of 69 participants from 7th and 8th middle school students participated in the study. The data were analysed using Pearson correlation to describe the direction and strength of the relationship between self-reported participation in sports using Physical Activity Questionnaire and Self-efficacy Questionnaire. The results supported that the importance of students being given a variety of opportunities to participate in physical sports activities as a method to build academic, social and emotional efficacy.

Özsoy, Toksöz, and Dindar (2022) examined on examination of mindfulness based self-efficacy of students studying in sports sciences. The sample of the research consists of undergraduate students studying at the faculty of sports sciences at Trakya University and Çanakkale Onsekiz Mart University were selected by convenience sampling method. The Conscious Awareness Based Self-Efficacy Scale - Revised (Cayoun et al., 2012) and adapted into Turkish (Atalay et al., 2017) was used for data collection. The statistical information of the participants was evaluated by using the descriptive survey method. Skewness and Kurtosis values were evaluated statistically by Normal Distribution test analysis. First of all, by looking at the Cronbach Alpha values of the scale, after the validity and reliability analysis, the skewness and kurtosis values of the obtained data were examined and tested. Regular exercise status of students studying in sports sciences, taking part in sports organizations organized by university federations, having a licensed athlete for at least three years, according to the exam score taken as a basis for university application, according to the university success score, according to the frequency of participating in recreational activities, It was tested statistically according to the status of working in any job, university, department and class, and no significant difference was found in mindfulness based self-efficacy, while a significant difference was obtained according to the gender variable. The result of Mann Whitney-U Test was obtained that male undergraduate students studying in sports sciences participating in the research had higher mindfulness based self-efficacy levels than females ($P: 009 < 0.05$).

Oguntuase and Sun (2022) studied on effects of mindfulness training and locus of control on Self-efficacy of professional football players in Nigeria. This study employed experimental design of pre-test, post-test control group. The study recruited 35 participants which were randomly assigned into experimental ($n=18$) and control ($n=17$) group, age ranged between 16 and 32years (Mean age = 22.6 years, $SD = 1.47$). Eight weeks intervention programme of mindfulness acceptance commitment was conducted for experimental group, while control group counterparts received no intervention. The participants completed Five Facet Mindfulness Questionnaire, General Self-efficacy Scale and Adapted Levenson Multidimensional Locus of Control scales. Both groups completed the instruments at pretest and post-test evaluation in about 25 to 30minutes. The data collected was analysed by using Analysis of Covariance and Bonferroni Pairwise

Comparison. This revealed that mindfulness acceptance commitment was effective in enhancing self-efficacy of the intervention group compared to control group ($F(1,30) = 11.455, p < 0.05$). The study indicated that locus of control increased self-efficacy of intervention group than the control group participants ($F(1,30) = 51.16, p < 0.01$). The study added that participants with internal locus of control had higher mean scores than the participants with external locus of control. There was no significant interaction between treatment, locus of control and self-efficacy ($F(1,30) = 2.537, p > 0.05$). This study provided an insight that Mindfulness Acceptance Commitment is an effective mindfulness training programme and locus of control to enhance and increase self-efficacy of elite football players which in turn could improve performance and attain success.

Popa, Mindrescu, Iconomescu and Talaghir (2020) investigated the mindfulness and self-regulation strategies predict performance of 288 Romanian Handball Players. The participants were 30% male and 70% female, with age between 12.01 and 14 years old, divided in three categories. The quantitative research design is descriptive and transversal. The method was survey based on questionnaires. There were interesting results found in different age categories and different performance levels. The variables (state mindfulness of body, self-monitoring, and self-efficacy) explained 87% of the variance in sports performance, in a hierarchical multiple regression. The research findings indicated that handball players with a high level of acceptance of one's own thoughts and emotions, non-judging present moment awareness, conscious monitoring the execution of movements and confidence in their abilities to succeed could have more chances to achieve the desired performance.

Gharibvand, Makvandi and Heidari (2022) scrutinized on relationship of competitive anxiety and mindfulness with sports self-efficacy of male athletes mediated by family cohesion. The statistical population of this descriptive correlational study covered all male athletes in Masjed Soleyman, Iran (2021), and a sample of 258 athletes was selected using convenience sampling. The research tools included the Sports Self-efficacy Questionnaire, Competitive Sports Anxiety Questionnaire, the Mindfulness Inventory for Sport, and the Family Cohesion Questionnaire. The proposed model was evaluated using path analysis, and indirect correlations were tested with bootstrapping. The results suggested that all direct paths to sport self-efficacy were significant except athletic

mindfulness ($p < 0.01$), and indirect paths to sports self-efficacy became significant through family cohesion ($p < 0.01$). According to the results of this study, the proposed model had good fitness and was a major step toward recognizing the factors affecting sports self-efficacy in male athletes as it can be helpful in designing effective plans to reduce males' experienced tension and improve their sports self-efficacy.

Ameri, Alamdar and Etemadi (2022) examined on sport performance prediction model based on competitive anxiety, mindfulness and self-efficacy in 253 athletic university students completed Sport Competitive Anxiety Test, Sport Self Efficacy Scale (SSES; Besharat, 2008), Mindfulness Scale-Revised and Sport Performance Inventory (Competitiveness subscale). A multiple regression was used to analyze the proposed model. Results indicated model accounted for 48% of the variance in sport performance. Correspondingly, results revealed that competitive cognitive anxiety, Sport Self-efficacy and Mindfulness had a significant relationship with sport performance. Overall, beside the physical readiness of athletes for competition, their performances may not qualify if they do not have control over their psychological status.

Gharivbvand, Makvandi and Heidari (2022) analysed the relationship between sports aggression and sports mindfulness with sports self-efficacy in male athletes; the mediating role of family cohesion. A total of 258 athletes were selected by using convenience sampling and they were administered by Sports self-efficacy Questionnaire, the Buss-Perry Aggression Questionnaire, the Mindfulness Inventory for Sport, and the Family Cohesion Questionnaire. The proposed model was evaluated using path analysis and indirect correlations were tested with bootstrapping. The results suggested that all direct paths to sport self-efficacy were significant except sports mindfulness ($P < 0.01$), and indirect paths to sports self-efficacy became significant through family cohesion ($P < 0.01$). The proposed model had a good fit, and was a major step toward recognizing the factors affecting sports self-efficacy in male athletes, and can help in designing programmes to reduce their experienced tension and improve their sports self-efficacy.

Caldwell, Harrison, Adams, Quin and Greeson (2010) proved on developing mindfulness in college students through movement-based courses: effects on self-regulatory self-efficacy, mood, stress and sleep quality. There were 166 college students enrolled in the 2007–2008 academic year in 15-week classes in Pilates, Taiji quan or

GYROKINESIS. beginning, middle, and end of the semester, participants completed measures of mindfulness, self-regulatory self-efficacy, mood, perceived stress, and sleep quality. The results revealed that total mindfulness scores and mindfulness subscales increased overall. Greater changes in mindfulness were directly related to better sleep quality at the end of the semester after adjusting for sleep disturbance at the beginning. Tiredness, Negative Arousal, Relaxation, and Perceived Stress mediated the effect of increased mindfulness on improved sleep. Movement based courses can increase mindfulness. Increased mindfulness accounts for changes in mood and perceived stress, which explain, in part, improved sleep quality.

Peachey, Cunningham, Lyras, Cohen and Bruening (2013) measured the influence of a sport for peace event on prejudice and change agent self-efficacy. In Study 1, participants (n = 136) completed questionnaires both before and following their participation in a sport for peace event. The event was designed to ensure both high levels of and quality intergroup contact, with interactions confirmed through a manipulation check. Results indicated significant decrease in prejudice and significant increase in change agent self-efficacy. Social dominance orientation did not influence the nature of these changes. In Study 2, focus group interviews with 27 participants was conducted to better understand how the event impacted prejudice and change agent self-efficacy. Results specify that the team-based sport environment and social opportunities were instrumental in prejudice reduction while the educational platform was important for increasing change agent self-efficacy.

Dove, Mathew and James (2019) explored how self-efficacy influences performance in collegiate club rowing athletes during a 2,000 meters ergometer test. Twenty-one collegiate club rowers (14 men, 7 women) completed a demographic measure, the Primary Appraisal Secondary Appraisal measure and the Rowing Efficacy Inventory – Individual prior to performing the 2k test, and then retook the Primary Appraisal Secondary Appraisal after. One male participant was forced to stop the 2k test briefly, and was therefore removed from analysis. Due to significant differences in 2k test performance between male participants (M=440.85, SD=19.38), and female participants (M=519.80, SD=32.12), $t(19) = -6.91$, $p < 0.001$, a linear regression test was run separately for each gender. This test showed that Self-efficacy significantly predicted 2k test performance in male rowers, $b = -$

0.62, $t(11) = 2.63$, $p = 0.02$, and Self-efficacy also explained a significant proportion of variance in 2k test performance, $R^2 = 0.39$, $F(1,11) = 6.96$, $p = 0.02$.

Crowder and David (2015) inspected the outcomes of mobile learning used to train elite level hockey players as measured by Kirkpatrick's evaluation model. A population of 27 elite level junior, college, university, and professional hockey players ages 18 to 26 were provided with access to sport specific nutritional learning. They accessed the nutritional content via mobile devices over a 4-week period. Responses from pre and post-test, documented the reactions to mobile learning, described changes in nutritional knowledge, changes of behaviour and use of self-regulated learning strategies. In the examination of change in the learner's knowledge level several additional aspects were examined, looking for connections between learning with a mobile device and motivation, relevance, self-efficacy and self-regulated learning strategies. Findings demonstrate an overall positive reaction to learning with a mobile device, that significant learning did occur ($p < 0.001$), and noticeable behaviour change as result of the learning was observed ($p < 0.05$). The participants perceived level of self-efficacy for learning with a mobile device did not appear to affect their motivation or learning.

Conceptual Framework

