

Effects of Psychological Skills Intervention on Exercise Adherence among University Senior Staff in South-West, Nigeria.

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Abstract

This study was carried out to determine the effect of psychological skills intervention on exercise adherence among Tai Solarin University of Education Senior Staff, Ijebu-Ode, Nigeria. Study sample was one hundred and seven participants (N-107), comprising fifty-nine females (N-59) and forty-eight males (N-48) who were assigned into four groups of exercise programme through a stratified random sampling technique. The instrument used for data collection included the exercise programme prescriptions of the American College of Sports Medicine and adapted educational items on psychological skills intervention. The Cronbach alpha coefficient for goal setting for exerciser (GSE), positive self talk for exerciser (PSTE) and combined goal setting and positive self talk for exerciser (GSPSTE) are 0.79, 0.67 and 0.89 respectively. Modified self report questionnaire showed that the internal consistency stood at 0.78 for goal-setting, positive self talk, 0.81 and combined goal setting and positive self talk, 0.83. Groups A,B,C received psychological skills intervention, while group D served as the control. All the groups participated in the same exercise programme for 13 weeks and their adherence level was determined using attendance log book and self report questionnaire that was administered on experimental groups A,B,C. The data were analysed using t-test, chi-square, ANOVA and Scheffe (Post hoc test) statistical tools. The alpha level was set at 0.05. The results revealed that significant differences exist in t-test value for goal setting, positive self talk and goal setting and positive self talk combined. That is, the psychological skills significantly influenced exercise adherence. Chi-square results revealed significant values of self-report for experimental groups one, two and three. ANOVA was used to find out the interaction among the four groups and the result was significant. A further Scheffe post-hoc analysis was employed to determine where the differences occurred among the groups. The calculated values revealed that goal setting was effective; positive self-talk, effective; goal setting and positive self-talk combined, most effective. Based on the findings, the study recommended that psychological skills should be taught to exercisers in order to enhance exercise adherence.

Keywords: Exercise adherence, psychological skills intervention, goal setting, positive self-talk.

Introduction

For ages, man has been involved in various kinds of activity. He had to walk long distances to reach his destination, run away from hostilities and dangers, jump, hunt for animals, farm, climb trees and hills. His body was adapted to these activities which he did with ease and minimal efforts. The advancement in technology in modern times and urbanization have greatly impacted negatively on quest for exercises. Modern man finds more pleasure drinking alcohol in the evening after a day's work, watching films, and using the reduced energy expenditure saving equipment and devices, such as automobiles, computers and telephones to promote sedentary life styles. He finds little or no time to engage in organised physical exercise, the resultant effects culminate to decreased physical fitness level, stiffness and pains at joints, fatigue, sleeplessness, depression, among other psycho-physiological disorders which affect his health and wellness.

Exercise is crucial to fitness. Keeping fit helps in the prevention of diseases and conditions such as diabetes, coronary related diseases, (Awopetu, 2007, Otinwa 2010) musculo-skeletal problems (Ajala, 2005), state anxiety, depression, insomnia (Adeyeye 2007, Ikulayo, 2007). Ajala (2005) buttressed this assertion that exercise is more effective as preventive measure against diseases and illnesses if started at a very young age. He however, explained further that there is a very strong argument in favour of beginning to exercise at any age. It is imperative to state that many people find it easier to start an exercise programme than to stick with it (Berger, Pargman and Weinberg, 2002). Exercisers often have lapses in trying to adhere to exercise programmes. This gives rise to the concept of exercise adherence which implies sticking or keeping tenaciously to a programmed physical exercise.

Emiola (2008), defined exercise as physical activity that is planned, structured, repetitive and purposive with the objective of improving or maintaining physical fitness. Emiola pointed out that the positive effects of exercise on all major systems of the body, both the long-term and the short-term effects are no longer secrets. However, many of our citizens either through ignorance or their die-hard inactive habits, have failed to take advantage of the very inexpensive road to a healthy and fit life provided by exercise. It is note-worthy to point out that exercise and sporting activities like other human activities as opined by Adeyeye and Otinwa (2009), require certain variables to synchronise positively towards the realization of the set goal(s); that is, success in exercise and sports performance depend on certain physical and psycho-social constructs among which, if one or more is (are) missing, or not properly harnessed, the exerciser or athlete may find his or her desired or anticipated success, elusive.

Participation in sports or exercise programme is influenced by a number of factors including good equipment and facilities, (Idou, 2011), peer influence, (Ipinmoroti, 2006), pleasant memories of fun had in school physical education and youth sports programmes, (Onifade 2004a), social support, support of significant others, likeable exercise leadership, (Onifade, 2001a), fee affordability (in fitness clubs), varied exercise programme tailored towards the needs of exercisers and so on. All these factors may trigger on participation in exercise programme, but, as rightly found out by Bandura (1997), Berger, Pargman and Weinberg (2002), people find it much easier to start an exercise programme than to stick with it.

Nevertheless, Weinberg and Gould (2011) noted that potential relapses may have a more limited impact if an exerciser or group of exercisers plan and anticipate them, recognise them as temporary impediments and develop self-regulatory skills in form of psychological intervention(s) for preventing relapses. Most exercisers need encouragement so that at least part of exercise can be found pleasurable with personally meaningful activity that includes elements of fun and personal fulfillment. Adeyeye (2011), Ikulayo and Adewunmi (2011) clearly stated that there is a need for sport and exercise psychologist who can assist

individuals to develop psychological skills that can be adopted in order to sustain participation in exercise programme.

Application of psychological skills intervention to exercise adherence for solving wellness and keeping fit issues, especially in the Western world have been sufficiently documented in literature. In Nigeria however, researchers have reported increased incidences of decreased fitness level and degenerative health conditions occasioned by reduced physical activities which is complimented by sedentary lifestyles. Hence, the needs for active promotion and sustenance of exercise and sports participation to reduce proneness to inactivity related ill-health conditions among Nigerians, using various strategies become inevitable.

Previous studies have shown that attempts by many professionals in the field of exercise therapy to make Nigerians participate in exercise have been met with challenges that relate to drop-outs, malingering, reported occupational borne-out, and dearth of knowledge on the positive effects of exercise. Therefore, there is a need to employ some psychological interventions to enhance and sustain exercise participation among Nigerians. An intervention programme conducted in Tai Solarin University of Education by the department of Human Kinetics and Health Education and the Medical Health Centre in early 2007 to encourage interpersonal relationship among staff, improve their fitness level and reduce proneness to degenerative health diseases, recorded dwindling participation of the exercisers after the third week of commencement. This also served as a rationale for the adoption of psychological skills intervention in this study to stem the tide of drop-outs in exercise participation.

Cousins and Gillis (2005), Ikulayo, and Adekoya (2008), Adewunmi (2009), Adeyeye (2011), Diane and Whaley (2011) have employed various motivational strategies to boost mastery of sports skills and exercise adherence. That psychological intervention technique can be used to enhance athletic performance is already an acknowledged fact (Salokun & Ogungbenro, 2006, Ipinmoroti, 2009). Though, a handful of psychological strategies have been employed in Nigeria for enhancement of skills and strategies in competitive sports such as goal-setting, positive self-talk, concentration, confidence among others, but they have not been sufficiently utilised among Nigerian exercisers for exercise adherence, especially in areas of fitness and wellness. Therefore, this study is set to find out the effects these psychological skills (goal-setting, positive self-talk, combined goal-setting and positive self-talk) could play in motivating adherence in an organised exercise programme among the Tai Solarin University of Education senior staff.

Materials and Methods

Participants: The sample size for this study was one hundred and seven (107). An informed consent form was designed which stated clearly what the study was about and what were expected of the participants. The forms of medically certified consented participants were numbered using gender as basis for stratification and balloting system for assigning participants to the four groups at different locations on campus. One hundred and seven (107) participants turned out for the educational phase meetings which lasted for two (2) days and they constituted the participants for this study.

The break-down of participants that participated in the study are given thus:

	Total Participants	Female	Male
Goal setting group	- 26	14	12
Positive self-talk group	- 26	15	11
Combined goal setting/positive self-talk group -	27	14	13

Control	-	28	16	12
Total	-	107	59	48

Instrumentation

Educational talk on goal setting, positive self-talk and combined goal-setting and positive self-talk served as the instrument for this study. These psychological skills as posited by Weinberg and Gould (2011), generally follow a set structure with three distinct phases: education; acquisition; and practice. Also, standardised questionnaire on self-report served as additional instrument for the three experimental groups to determine the effectiveness of the educational talk received on the psychological skills intervention.

Goal Setting Instrument

For goal setting, this study adapted “SMART” by Cox (2002), goal-setting instrument for exercise (GSIE) by Ikulayo and Adekoya (2008) and “SMARTS” by Weinberg and Gould (2011) and with minor modifications. Thus, the acronym, “SMARTER” was coined out to give educational talk on goal-setting to the participants in goal-setting group. The items of instrument focused on how to set personal achievable target, take action, measure it within a specified time frame, reward and evaluate self, as well as reinforcing participation. An additional self-report questionnaire was given to exercisers in this group.

Positive Self-Talk Instrument

For positive self-talk, the researcher adapted self-talk’ rules and techniques for creating performance execution and enhancement as outlined by Cox (2002), Hardy (2008a); and (2008b). The content contains a pair of eight items with the first eight expressing negative self-talk which could inhibit regular exercise while the remaining eight expressed positive self talk to counteract the first eight negative self-talk in order to initiate positive action to regular exercise programme. Moreover, the content explains some reasons that influence exercise adherence. Such reasons include fitness, time consciousness, fun, healing of injury. An additional self-report questionnaire was given to participants in this group.

Goal Setting and Positive Self-Talk Combined Instrument

The principles of Cox (2002) in the teaching of confidence and positive self-talk and the guidelines outlined by Weinberg and Gould (2011) in the teaching of goal-setting and positive self-talk to athletes were modified. The researchers modified these items to give educational talk to participants in experimental group C. The content of combined psychological skills of goal setting and positive self-talk culminated into the acronym, “REGUSTE” which focuses on “remember exercise goals using self talk, encourage”. The first item on remember (“r”) was to teach and measure participants’ level of focus, dedication and passion for exercise. Exercise (“e”) teaches and measures level of plan and purpose attached to exercise. Goals (“g”) teaches and measures participants’ setting of specific, realistic, attainable and measurable goals. Using self talk (“u”, “s”, “t”) focuses on changing negative self talk to positive self-talk. Whereas, encourage (“e”) teaches and measures level of encouragement through the use of reinforcement. An additional questionnaire was also given to the exercisers.

Guidelines for Exercise Prescriptions

Recommendations of progressive fitness programmes by Sharkey and Gaskill (2007) were modified and they complied with the prescriptions of the American College of Sports Medicine (ACSM, 2007) on frequency, mode, duration and intensity, taking into consideration, the maximum heart rate (MHR) of beginners.

The participants participated in walking, jogging, stretching and minor games, which were varied for the entire duration of the study (13 weeks). All participants in the experimental groups only responded to a self-report questionnaire. A log book was used to monitor their regular participation

Using Statistical Package for Social Science (SPSS) to establish the internal consistency of the educational items, the Cronbach alpha coefficient of positive self-talk stood at 0.67 while the combined psychological skills of goal setting and positive self-talk had a reliability of 0.89. The goal setting instrument for exerciser (GSIE) had a reliability of 0.79.

An additional standardized questionnaire items on self-report of goal setting for exercisers (GSE) and positive self talk were modified. The reliability of these tests were established. The internal consistency, using Cronbach alpha coefficient stood at 0.78 and 0.81 respectively. The self-report questionnaire of goal-setting and positive self talk combined group reported an alpha coefficient of 0.83.

Procedure

The education phase of the psychological skills teaching took place on specified dates with the groups in designated classrooms. Two days were spent for the meetings with participants. The groups were told about the varied exercise programme and to attend the exercise programme actively three times in a week, on Tuesdays, Thursdays and Saturdays for three months between 7.00am and 8.00am. They were also informed about the trainer that would train their groups.

The participants in positive self talk group were taught on how to identify some inhibiting thoughts that could derail their smooth attendance of the exercise programme for three months and write positive statement in order to spur their continuous participation. For the goal-setting/positive self-talk combined group, the participants were taught the skill of goal setting first and later, the positive self-talk which should be written down and internalised in order to achieve their goal(s) of attending the exercise programme without stoppage, three times weekly for three months. The goal setting group received educational talk on how to use “SMARTER”. The control group did not receive any psychological skill intervention. They were only enjoined to attend the exercise programme three times in a week.

Four different locations on campus were used for exercise programmes. The exercise programme included walking, jogging, stretching and minor games and was conducted by the researchers that served as group leaders for each group.

The researcher revised the psychological skill training for 10 – 15 minutes once a week with each experimental group from the 2nd week of the exercise programme to the 7th week. The time of the data collection for attendance in exercise programme was in the morning from 7am – 8am on Tuesdays, Thursdays and Saturdays for 13 weeks. Questionnaire on self-report was administered personally and retrieved personally by the researchers in the last week of the exercise programme.

The researcher made use of a general log book of attendance, whereas each of the researchers also monitored participation with a log book each. The researcher reconciled and collated the attendance records at the end of each exercise session.

Scoring System

Regular Attendance Using Log Book	Point
1 day	1
3 days weekly	3

12 days monthly 12

39 times for the entire duration 39

For the questionnaire, five (5) point scale was used thus:

0	1	2	3	4
Never	Rarely	Sometimes	Frequently	Always

Statistical Analyses

Descriptive statistics of percentages and the inferential statistics of t-test, chi-square, ANOVA were used to analyse the data. Where there was any significant difference between the groups, the Scheffe post-hoc analysis was used for further analysis.

The significance level for all statistical analyses were set at 0.05 alpha level.

Results

Hypothesis 1: There will be no significant difference in exercise adherence between goal setting group and control group.

Table 1: T-test Analysis on goal setting group and Control group.

	Mean	N	Std. Deviation	Std. Error Mean	Df	T-test	Sig.
Pair 1 - Goal Setting	22.5385	26	8.59875	1.68635	25	3.863	.001
Control	20.1923	26	29.06134	5.69940			

Level of confidence = 0.05

Table 2: Showing Analysis of chi-square (x^2) results on exercise adherence of self-report of goal setting group.

x^2	Df	Assumed Sig.
2.846	2	.241

Significant $P < 0.05$

The above stated hypothesis one was tested using t-test statistics. The results in table 1 showed a significant t-value ($t = 3.863$, $df = 25$, $P < 0.05$). Table 2 shows a further test statistics chi-square (x^2) results of self report for hypothesis one which reported a significant calculated value of 2.846. The above stated hypothesis was therefore rejected meaning that a significant difference exists in exercise adherence between goal-setting group and control group. This implies that goal setting significantly influenced exercise adherence.

Hypothesis 2: There will be no significant difference in exercise adherence between positive self-talk group and control group.

Table 3: T-test analysis for the positive self-talk group and control group

	Mean	N	Std. Deviation	Std. Error Mean	Df	T-test	Sig.
Pair 2 – Positive Self-Talk	20.5000	26	5.84637	1.14657	25	3.335	.003
Control	20.1923	26	29.06134	5.69940			

Level of confidence = .05

Table 4: Chi-square analysis for positive self-talk group

χ^2	Df	Assumed Sig.
4.000	2	.135

Significant $P < 0.05$

The above stated hypothesis was tested using t-test statistical tool. The result in table 3 showed significant t-value ($t = 3.335$, $df = 25$, $P < 0.05$). Also, a self report of exercisers in this group was calculated as shown in table 8, using chi-square (χ^2). The results in table 4 revealed a significant chi-square (χ^2) value of 4.000. In essence, the hypothesis was rejected, meaning that a significant difference exists in exercise adherence between positive self-talk experimental group and control group. That is, positive self talk positively affected exercise adherence.

Hypothesis 3: There will be no significant difference in exercise adherence between goal setting

and positive self-talk combined group and control group.

Table 5: T-test analysis on combined goal-setting and positive self-talk group and control group.

	Mean	N	Std. Deviation	Std. Error Mean	df	T-test	Sig.
Pair 3– Goal Setting/Positive Self-Talk	29.2593	27	6.83088	1.31460	26	9.523	.000
Control	20.1923	27	20.50841	5.48645			

Level of confidence = 0.05

Table 6: Chi-square results of exercise adherence on combined goal-setting and positive self-talk group.

χ^2	df	Assumed Sig.
22.231	2	.000

Significant $P < 0.05$

This stated hypothesis three was tested with t-test statistical tool and the results as shown in table 5, revealed a significant t-value ($t = 9.523$, $df = 26$, $P < .05$). In addition, a questionnaire on self-report for participants in experimental group three was calculated using chi-square test statistics. The result of χ^2 calculated in table 6 was significant at 22.231. Hence the hypothesis three was rejected signifying that significant difference exists in exercise adherence between the combined psychological skills of goal setting and positive self-talk experimental group and control group. That is, combined goal setting and positive self talk positively affected exercisers to adhere to exercise programme.

Table 7: Showing Average percentages (%) of all Groups Attendance in exercise programme.

Goal Setting Group	Positive Self-Talk Group	Goal Setting/Positive Self-Talk	Control Group
60.26%	52.56%	67.33%	37.09%

Only the experimental groups received psychological skills intervention, the control group were told to do their best in the 13 weeks exercise programme.

The results above revealed that all the groups that received psychological skills intervention demonstrated adherence to exercise programme. Control group with 37.09% was the lowest. Positive self talk was fairly above the average with 52.56%; goal-setting had 60.26% while participants in the combined goal setting and positive self-talk recorded the highest percentage of attendance with 67.33%.

The implication is that psychological skills intervention positively affected the participation of participants in the experimental groups.

Hypothesis 4: There will be no significant difference in exercise adherence among experimental groups one (goal setting), two (positive self-talk), three (goal setting and positive self talk combined) and the control group.

Table 8: One way analysis of Variance (ANOVA) of experimental groups one (goal-setting), two (positive self talk) and three (goal setting and positive) self-talk combined as they influence adherence of participation in exercise programme.

	Sum of Squares	Df	Mean Square	F	Sig .
Between Groups	3063.936	3	1021.312	20.638	.000
Within Groups	5097.111	103	49.187		
Total	8161.047	106			

F = 20.638

Significant at P <0.05

Table 9: Post-hoc analysis (Scheffé) to determine the significance of all the differences between all pairs of means in respect of all psychological skills as they influence adherence of participation in exercise programme.

(I) Groups	(J) Groups	Mean Difference (I - J)	Std. Error	Significance
1.00	2.00	2.03846	1.95107	.779
	3.00	-6.72080*	1.93292	.009
	4.00	8.07418*	1.91591	.001
2.00	1.00	-2.03846	1.96107	.779
	3.00	-8.75926*	1.93292	.000
	4.00	6.03571*	1.91591	.023
3.00	1.00	6.72080*	1.93292	.009
	2.00	8.75926*	1.93292	.000
	4.00	14.79497*	1.89742	.000
4.00	1.00	-8.07418*	1.91591	.001
	2.00	-6.03571*	1.91591	.023
	3.00	-14.79497*	1.89742	.000

Significant at P <0.05

The mean difference is significant at 0.05 alpha level.

From the results obtained above in table 8 of analysis of variance (ANOVA) which tested for the hypothesis four, there exists significant difference in exercise adherence among the three experimental groups (goal setting group; positive self-talk group; combined goal-setting and positive self talk group) and the control group (F = 20.638, df = 106, P < .05). Thus, the hypothesis four is hereby not accepted.

A further analysis using Scheffe post-hoc test as shown in table 9 revealed where the differences occurred. Comparing group one (goal setting) with others, there was a significant difference between experimental group one and three (combined goal setting and positive

self-talk); significant difference also existed between group one and control group, but none was found between the experimental group one and two (positive self talk).

The result further showed that there was a significant difference between experimental group two (positive self-talk) and experimental group three (combined goal-setting and positive self-talk) as well as between the experimental group two (positive self-talk) and control; whereof, none was found between the experimental group one (goal setting) experimental group two (positive self-talk).

A significant difference existed between the experimental group three (combined goal setting and positive self-talk) and all other experimental groups, that is, one (goal-setting), two (positive self-talk) and four (control). This study also found out a significant difference between experimental group four (control) and experimental group one (goal-setting) as well as between experimental group four (control) and three (combined goal setting and positive self talk). Significant difference also occurred between experimental group four (control) and two (positive self-talk).

Experimental group three (combined goal-setting and positive self-talk) was most significantly different from all other groups. From the results obtained in this study, the implication is that the combined goal-setting and positive self talk is the best psychological skill as far as exercise adherence is concerned.

Discussion of Findings

The overall purpose of this study was to determine the effect of psychological skills intervention on exercise adherence among senior staff of Tai Solarin University of Education, Ijagun, Ijebu-Ode, Ogun State. Four hypotheses were tested and the findings were discussed accordingly.

Hypothesis 1

Hypothesis one states that there will be no significant difference in exercise adherence between goal setting group and control group.

The finding showed the effectiveness of goal setting in motivating exercise adherence. When an exerciser sets a goal, it gives focus, thus, any achievement of the goal will be a morale booster and one is motivated to continue, and once one achieves, he or she continues performing the exercise. It is also a statement of fact that when participating in an activity for sometime, one is likely to develop interest in that activity and such interest will become fun and consequently, a motivating factor to continue exercising. This feeling will make the participant to have an increased pride, pleasure and satisfaction. At this instance, any obstacle met on the way will be disregarded and while achieving the attendance goal, exerciser develops resistance to disruptions and has improved attitudes toward exercise. This result corroborates the findings of Wilson and Brookfield (2013) in a study that examined the effect of goal-setting on motivation an adherence in a six-week exercise programme. The participants were randomly assigned to a process goal group and a no-goal control group. The results indicated that the participants in the process goal group had significantly greater adherence compared to the control group. The result further revealed that the participants in the process goal group scored significantly higher in interest, enjoyment and activity participation, compared to the control group.

In a related vein, Annessi (2012), in a study of goal-setting protocol in adherence to exercise by Italian adults found out that the utilization of goal setting protocol by fifty participants resulted in exercise adherence as they had significantly less drop-out of 30% than the control group also with fifty participants, but with a drop-out of 74%.

Hypothesis 2

Hypothesis two states that there will be no significant difference in exercise adherence between positive self-talk group and control group.

The results of hypothesis two demonstrated that positive self-talk assisted exercisers to adhere to exercise programme.

It is imperative to state that somebody participating in exercise will definitely meet hindrances that may affect continuation. For an average person, the self esteem is usually low as far as his or her ability to cope with the demands of activity is concerned and this usually brings negative thought which can discourage further participation. This is where an exerciser who has been educated to use positive self talk has an advantage. When such negative thought comes, such a person is equipped with the skill of blocking out the thought and replacing it with positive thought which can enhance further participation in the exercise. The control group lacked this psychological skill, hence, the significant difference.

The results buttressed the findings of Allison and Michael (2012) in a study that examined factors relating to exercisers' self-talk and exercise adherence. Out of one hundred and forty-six participants, there were ninety-one defined adherers and fifty-five non-adherers.

Questions were asked about their exercise participation, their use of and frequency of self-talk during exercise. Results indicated that adherers used positive self-talk more when they felt like quitting which was found to be a contributing factor to the maintenance of their exercise routines. The adherers claimed that positive and motivational self-talk encouraged them to exercise regularly. The study concludes that positive and motivational self-talk has potential influential effects on people's exercise behaviour and it can be used to encourage initiation and maintenance of exercise.

In another vein however, Zinsser, Bunker and Williams (2010), posited that self talk becomes a liability when it is negative, distracting to the task at hand, or so frequent that it disrupts the automatic participation or performance of skills. Hardy (2008b) equally stated that if exercisers do not interpret their self-talk as being motivating, one could not reasonably expect that content of self-talk to generate motivating effects and ultimately, enhanced regular participation in an organised exercise programme.

Hypothesis 3:

There will be no significant difference in exercise adherence between combined psychological skill of goal setting and positive self-talk and control group.

The findings in the study revealed that combined goal setting and positive self-talk intervention skill, had positive influence on the ability of participants to adhere to exercise programme.

The responses from most of the questionnaire items revealed that 25 out of 27 exercisers, representing 93% of participants in combined goal setting and positive self-talk group responded that, always, monitoring of the attendance record and using positive statement to discourage their self doubt increased the treatment of adherence and therefore provided a means for clarifying consequences of their action. They equally responded that written goal enabled verification of exercise anticipated goal while the use of cue words made their action clearer than merely an oral contract or writing down of goal only. Thus, writing down goal and using motivational words for achieving it are capable of helping exercisers to stay committed to their reasons for participation.

The findings in hypothesis three was buttressed in a study that investigated the effect of self-monitoring on exercise adherence over an 8-week supervised programme by Anshel and Seipel (2009). Over the intervention period, the self-monitoring group utilised self-talk in addition to self-monitoring list which served as a goal-setting tool to learn effective planning,

preparation, participation, performance and medical skills for engaging in structured exercise. The results indicated that the self-monitoring group was not only significantly superior at adhering to exercise regimens but greater at improving aerobic fitness levels as well. The findings suggest that combining effective behavioural strategies for exercise can influence positive exercise outcomes. The implication of this is that goal-setting and positive self-talk was effectively combined and employed in order to make exercisers adhere to exercise programme.

To buttress the findings above, Stetson, Frommelt, Boutelle and Cole (2013), assessed exercise related cognitions utilised by a group of cardiac rehabilitation patients, who were adherent to a structured exercise programme. Thirty-six subjects provided information on their cardiac history and exercise patterns and reported on how they coped with thoughts when exercising across situations. Responses rated, using a reliable coding scheme, revealed that the majority of the subjects evaluated their progress, relating to goals and engaged in motivational self-talk to enhance participation. The strategies, it was reported, assisted the subjects to focus on goals using cognitive distraction, motivational self-talk for arousal and engaging in social interactions. Findings suggest that the exercise adherent subjects in this study used specific cognitive and behavioural strategies described in the combined psychological skills of goal setting and positive self-talk.

Hypothesis 4:

There will be no significant difference in exercise adherence among experimental groups one (goal setting), two (positive self talk), three (goal-setting and positive self talk combined) and the control group.

This hypothesis was tested using the analysis of variance (ANOVA) and the result showed a significant F. value. This means that a significant difference existed in exercise adherence among the experimental groups one, two, three and the control group, causing the fourth hypothesis above to be rejected at 0.05 alpha level. The significance of “F” value motivated the use of Scheffe post hoc to determine the significance of all the differences between all pairs of means in respect of psychological skills and the motivation of exercise adherence among senior staff of Tai Solarin University of Education. The result revealed that the goal setting experimental group one was effective; positive self talk experimental group two was also effective, goal setting and positive self talk combined experimental group three proved the most effective.

This result looked at the inter-relationship among the groups and the findings revealed a limitation of goal setting alone when there are persistent obstacles to exercise adherence, where exercisers are bound to drop out if the obstacles persist. This is where positive self talk has an added value if combined with the goal setting because the exerciser is able to control inhibiting thoughts which enables him or her to focus more on the goal set, thereby ensuring adherence. On the other hand, depending on positive self talk alone has its limitation because no matter how positive somebody is about his thinking or ability, if no specific goal is set, the person will not be able to go far. From this submission, it can be deduced that both compliment each other in enhancing participation in exercise programme. Hence, the reason for why it was the most significant of the psychological skills intervention.

Studies have buttressed the findings in the hypothesis four above. Laundry and Solomon (2004) in a study to determine self determination across the stages of changes for exercise found out that the matching of intervention techniques of confidence and guided goal-setting were found to be more effective than development of self-help strategies and simply given them information about benefits of exercise. They concluded therefore that exercise specialists need to help individuals who appreciate all the benefits of exercise to adhere, using psychological intervention strategies.

Diane and Whaley (2011) wrote that what constitutes an effective exercise programme and adherence should not be isolated from the psychological preparation of prospective exercisers. They stated further in their article on the process of adult exercise adherence: self perceptions and competence that in a study of 10 weeks facilitated exercise programme through the expertise and guidance of exercise professionals of nineteen physically active male and female young adults ($m = 38.9$ years). They found out that psychological intervention strategies helped exercisers identify and develop possible selves that promote sustained exercise behaviour.

Prochaska, DiClemente and Norcross (1992) in a quantitative review of 127 studies examining the efficacy of interventions for increasing exercise adherence among 130,000 people in community, school, work, home and health-care settings found that interventions, on the average, increase exercise adherence from the typical rate of 50% to approximately 85%. Thus, interventions to enhance exercise adherence can work, the key is to find the best interventions for the particular setting and people in that setting.

In a study by Murru and Martin (2010) investigating the effects of intervention on self-regulatory efficacy and exercise behaviour, the findings revealed that participants assigned to conditioned group reported greater exercise behaviour than the control group, four weeks and eight weeks following interventions programme. The study further reported that the conditioned group reported good maintenance of exercise habits. It is noteworthy to state that professional trainers and their ability to apply cognitive and behavioural strategies influence exercise adherence.

This current study adopted grouping style, using four centres and in the course of interactions with the exercisers, some opined, especially, those in the experimental group three (that is goal setting and positive self talk combined) that part of the reasons why they stuck to the exercise programme was because of joy derived from the exercise companions coupled with the desire to meet their set goals while using trigger words (self talk) to spur themselves to more attendance. The opinion of the exercisers got credence from the position of Weinberg and Gould (2011), where they stated that group exercising leads to better attendance than exercising alone does; exercisers, they further posited need motivation or psychological intervention techniques where available, for exercise to become part of their daily chores or routines.

Conclusion

It can be concluded from the findings of this study that:

1. Goal setting psychological skill intervention utilised by experimental group one had significant influence on the ability of TASUED senior staff to adhere to exercise programme.
2. Positive self-talk was also effectively utilised by participants in group two to enhance their adherence to exercise programme.
3. A combination of the use of goal setting and positive self-talk by the experimental group three proved to be most effective in enhancing adherence to exercise programme.
4. A significant difference existed in exercise adherence among experimental groups one (goal-setting), two (positive self-talk), three (goal-setting and positive self-talk combined) and control group.

A further analysis revealed that the most significant difference occurred between the control group and experimental group three (combination of goal setting and positive self-talk) meaning that a combination of these two psychological skills is most effective in enhancing adherence to exercise.

Recommendations

Based on the above conclusion, the following recommendations are made:

1. That exercise professionals should fashion out a robust training programme to include progressive exercise regimens and teaching the psychological skills of goal setting, positive self talk and goal setting and positive self talk combined in order to enhance exercisers' adherence.
2. Fitness trainers should develop their training programme by including a variety of buffer activities in order to create fun and enjoyment.

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