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Effect of digital storytelling intervention on burnout thoughts of adolescent
Athletes with disabilities

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Abstract

Background/Objective: Both athletes with and without disabilities can develop burnout symptoms. However, athletes with disabilities may face different or more challenges compared to their counterparts without disabilities. The present study aimed at ascertaining the effect of digital storytelling intervention on burnout thoughts of adolescent-athletes with disabilities.

Method: This study is a randomized controlled trial involving a total of 171 adolescent-athletes with disabilities who showed a high degree of burnout symptoms. These adolescent-athletes were randomly assigned to either an intervention group ($n=85$) or a waitlisted control group ($n=86$). The treatment intervention for the adolescent-athletes was digital stories which were created based on the framework of rational emotive behaviour therapy (REBT). The Athlete Burnout Questionnaire was used for gathering of data at three different times (baseline, post-test and follow up). Data were analyzed using repeated measure analysis of variance at a significant level of 0.05.

Results: Results showed that the digital storytelling intervention based on REBT significantly reduced burnout thoughts among disabled adolescent-athletes in the intervention group compared to athletes in the waitlisted control group as measured by the Athlete Burnout Questionnaire. Additionally, at follow-up evaluation, it was observed that the decrease in burnout scores was maintained by those athletes in the digital storytelling intervention.

Conclusion: Digital storytelling intervention based on rational emotive behaviour therapy shows great potentials in addressing burnout among adolescent-athletes with disabilities.

Abbreviations: ANOVA = Analysis of variance, REBT = rational emotive behaviour therapy.

Keywords: Adolescent-athletes, burnout thoughts, digital storytelling intervention, disabilities, rational-emotive behavioural therapy

1. Introduction

When an individual experiences intense psychological exhaustion and reduced productivity especially as a result of exposure to protracted stressful condition, such a person has higher possibility to develop burnout symptoms. The impact of burnout has been of great interest to researchers with a growing interest in athlete burnout in both elite and non-elite athletes.[1] Athlete burnout has been observed as a major factor for reduced training and competitive performance as well as diminished well-being

among athletes.[2,3] According to Raedeke,[4] three major symptoms distinguish athlete burnout, these include a reduced sense of accomplishment (that is, an athlete's tendency to negatively appraise his/her sporting abilities and attainments), physical and emotional exhaustion (that is, a feeling of depletion or fatigue physically and emotionally due to protracted training and/or competition), and devaluation toward sport participation (that is, an athlete's loss of interest and care in sport).

Several theories and conceptual models have been developed to guide research relating to athlete burnout and its source. Different researchers have theorized that the source of athlete burnout includes stress,[5] one-dimensional athletic identity together with a lack of control,[6] entrapment,[4] and unmet psychological needs.[7] Gustafsson et al.[8] proposed an Integrated Model of Athlete Burnout which incorporated aspects from assumptions of previous models. Existing models and conceptual frameworks of athlete burnout, among other things, suggest the following. First, athlete burnout is real and threatening, hence, the considerable effort devoted to describing and delineating it for an adequate understanding of the concept. Second, the source of athlete burnout could best be described as diverse, hence, the different etiological perspectives describing it. However, there is over-dependence on cross-sectional and correlational designs in the study of athlete burnout, and scarcity of research on athlete burnout treatment and prevention.[9] In order to tackle these shortcomings, the present study has chosen to provide burnout intervention for adolescent-athletes with disabilities.

Athletics and sports generally play important roles in the lives of present-day youths and adolescents.[10] Adolescents who engage in athletic activities have been reported to enjoy numerous health benefits.[11–13] Adolescents with disabilities, in particular, could benefit from participation in sports and athletic activities.[14] However, studies have shown that participation of adolescents with disabilities in athletics and physical activities is poor when compared to other adolescent populations.[15–17] Individuals with physical disabilities reported that among other reasons, their poor participation in sports and physical activities could be attributed to environmental barriers, insufficient social support, pain, physical limitations and negative beliefs about exercise benefits.[18–20] These reasons adduced for poor participation in sport by adolescents with disabilities could be linked to burnout symptoms.[14,21,22] Studies have also linked biological abnormalities/disorders with suicidal behaviours which in turn constitute symptoms of severe psychological distress and burnout.[23,24] Sports dropout may be the ultimate consequence of athlete burnout,[25] and the majority of elite adolescent-athletes with disabilities may be at risk if urgent intervention is not provided.

Apart from local competition, elite adolescent-athletes with disabilities from different countries compete in international para-sports.[26] Nigeria, with a population of about 25 million individuals living with different forms of disability[27,28] has featured athletes who have made marks in these competitions.[27,29] However, incidents of poor treatment, very stressful training conditions and very poor quality of life are rife among Nigerian para-athletes.[27] Thus, a significant number of these athletes might be at risk of developing athlete burnout. Some techniques have been identified in previous studies as a possible means of treating athlete burnout. Such techniques include mindfulness-based program,[30] acceptance and commitment therapy,[31] and autonomy support therapy.[32] However, researchers[9] suggested that cognitive behaviour therapy interventions used for the management of stress and burnout outside the

sports domain may provide informative directions for practitioners working to reduce and/or prevent burnout in the field of sports. Therefore, in line with this suggestion, the present study aimed to apply digital storytelling as an intervention for reducing burnout thoughts among adolescent-athletes with disabilities in Nigeria.

1.1. Digital storytelling intervention

Digital storytelling is an amalgam of the art of traditional storytelling with digital media, as well as text, pictures, recorded audio narration, music and video.[33] These multimedia elements are blended using computer software to tell a story that usually revolves around a specific theme or topic and often contains a particular point of view. Most digital stories are relatively short with a length of between 2 to 10 minutes and are saved in a digital format that can be viewed on a computer or other devices capable of playing video files.[33] There are many different types of digital stories such as personal narratives, historical documentaries, and stories that inform or instruct the viewer on a particular concept or practice.[34] Digital stories comprise a point of view, a dramatic question, emotional content among other elements which distinguish it from other audio-visuals.[34,35] The present study would adopt stories consistent with personal narratives; stories that tell the lived experiences of others in order to inform and guide.[34]

Research has shown the diverse applications and adaptations of digital storytelling in different areas. For instance, Goodman and Newman[36] conducted a study aimed at examining the use of oral versus digital storytelling as interventions to reduce the emotional health consequences of female adolescent stress, anger, anxiety, and depression. Digital storytelling has been found to help people cope with past traumatic experiences,[37,38] control drinking issues and stabilized attitude towards drunkenness,[39] create an experience of healing, promote self-expression, reflection, share and release troubling emotions.[40] More recently, digital storytelling has been adapted as a tool for rational emotive behaviour therapy (REBT). Researchers[41,42,43] created and used a rational-emotive digital storytelling intervention (REDStory) as a therapeutic tool for improving the knowledge and risk perception of HIV/AIDS among schoolchildren in Nigeria. The present study would follow a similar adaptation of REBT as in the REDStory intervention.[41,42]

The present study aims to design digital stories based on the rational emotive behaviour therapy ideology that cognitive, behavioural and emotional interpretations of events in a dysfunctional manner could expose an individual to a high risk of problem behaviours and maladaptive thoughts.[41,42,43] The digital storytelling intervention creates stories of peoples' lived experiences as well as adapt other rational emotive behaviour therapy techniques aimed at cognitive reconstruction, problem-solving and re-education to modify behaviours associated with burnout. The present researchers believe that the intervention would equip disabled adolescent-athletes having burnout thoughts with coping skills and strategies, as well as, positive personal perspective of life's challenges as they are encouraged to be dedicated to a rational decision about behaviour change. To our best knowledge, such intervention is scarce in the sports domain, among disabled athletes and in developing countries.

Overall, the purpose of the present study is to ascertain the effectiveness of digital storytelling as an intervention for burnout thoughts among adolescent-athletes with disabilities. We hypothesize that digital storytelling intervention based on rational

emotive behaviour therapy would be effective in managing burnout thoughts among adolescent-athletes with disabilities.

2. Method

2.1. Ethical approval

This research was approved by the research and ethics committee of the Faculty of Education, the University of Nigeria Nsukka with approval number REC/FE/2018/000070. Additionally, it was ensured that the study met the ethical conditions of the World Medical Association Declaration of Helsinki.

2.2. Study design

A randomized controlled trial.

2.3. Study setting

This study took place in Southeast Nigeria. Geographically, this is located within latitude and 5ºN to 6º N of the equator and longitude 6ºE and 8ºE of the Greenwich prime meridian. Southeast, it is one of the six geopolitical zones in Nigeria. It is the native land of the Igbo tribe of Nigeria. It is comprised of 5 states: Enugu, Anambra, Imo, Abia and Ebonyi. It covers a total area of about 40000 km^2 with a population of over 21 million.

2.4. Study participants

This study involved 171 adolescent para-athletes involved in the preparation for various local and international competitions in Southeastern Nigeria who met the following inclusion criteria: 1) athletes with any of the following eligible impairments: impaired muscle power, impaired passive range of movement, limb deficiency, leg length difference, short stature, hypertonia, ataxia, athetosis and visual impairment;2), obtained parents/guardian consent letter to participate if the athlete is below 18 years; 3) athlete aged between 11 to 21 years; 4) athlete scored high in the Athlete Burnout Questionnaire at pretest. The enrollment procedure is contained in Figure 1. We conducted a power analysis using G-power 3.1 Software[44] to determine suitable sample size for the study. In the power analysis, we determined the minimum sample size suitable for repeated measures ANOVA such that the intervention will have a moderate effect (0.5)[45] while achieving a 90% statistical power at a significant level of 0.05. The sample size of the present study was above the minimum required sample size of 32 participants.

3. Measures

3.1. Athlete burnout questionnaire

Data collection for this study was done using the Athlete Burnout Questionnaire[46] which measures athlete burnout in three
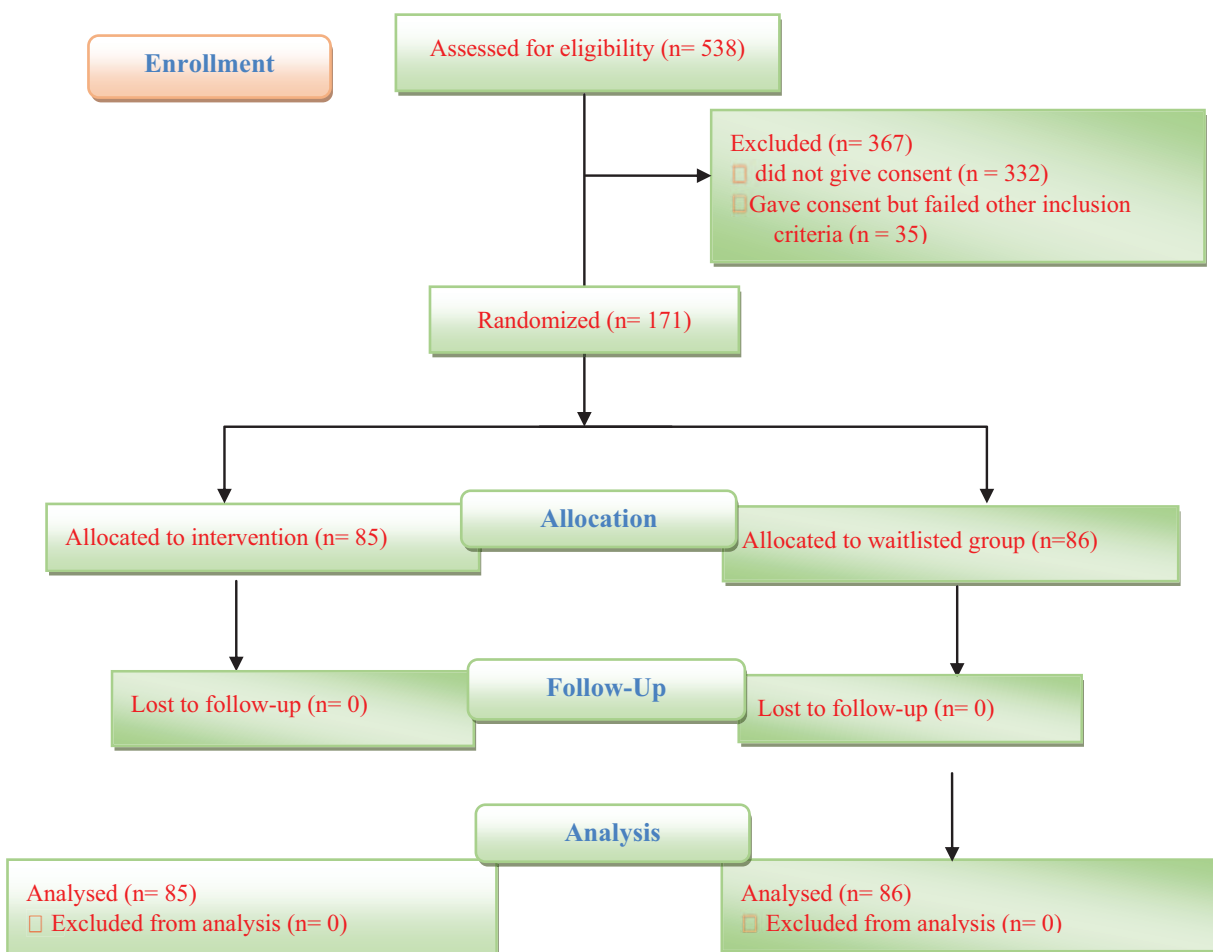

Figure 1. Enrolment/eligibility procedure.

dimensions namely, emotion/physical exhaustion (E), reduced sense of accomplishment (RA), and devaluation of sports (D). Each dimension is measured by 5 items on a 5-point rating scale of almost never (1), rarely (2), Sometimes (3), Frequently (4), Almost always (5). To determine athlete burnout, items 1 and 14 were reversed before scores were summed up so that higher scores would reflect a higher level of burnout. Examples of some items of the questionnaire include, I feel "destroyed" by the sport; I have negative feelings towards the sport; and No matter what I do in sport, I do not perform as well as I should. The Athlete Burnout Questionnaire has been validated in previous studies and each subscale showed good internal consistency.[46,47] In the present study, the Athletic Burnout Questionnaire showed high internal consistency in the different subscales: E (α = .86), RA (α = .85), D (α = .81) and Overallreliability, α = .94.

3.2. Demographic questionnaire

Participants' demographic characteristics were obtained using a demographic questionnaire. Participants were asked to provide the following personal information: gender, age, state, diagnosed impairment, athletic/game specialization, and the number of hours of training per week. See Table 1 for participants' demographic characteristics.

3.3. Intervention procedure

The researchers visited five stadiums in the five chosen states in Southeastern Nigeria where the athletes converge daily for practices/training exercises. There, with permission from the coaches, a meeting was organized between the researchers and the athletes. In the meeting, the athletes were informed about the intervention and its purposes and equally encouraged to participate. Athletes willing to participate were meant to sign an informed consent form (for athletes above 18 years) or a parent/guardian consent letter (for athletes less than 18 years). A total of 538 letters/forms were given out, 206 consents were received. These were further subjected to other eligibility criteria including showing high burnout symptoms as measured by the Athlete Burnout Questionnaire (burnout data served as baseline data). A total of 171 athletes met all the criteria in the five states. These 171 athletes were further informed of the details of the intervention and promised to confidentially handle their personal information. They were also notified of their freedom to quit the intervention at any point they wish. The intervention lasted from October 2019 to December 2019 with one session per week which lasted 90 minutes. To ensure that time/date clashes were eliminated and to ensure better coordination and supervision, each of the five centres chose a particular day of the week for their meeting. No two centres were allowed to choose the same day. At the start of the intervention in each state/centre, the eligible participants were randomly assigned to either of the 2 groups: intervention group and waitlisted control group (see Fig. 1). As the participants in the intervention group received the digital story intervention, those in the control group were waitlisted to begin the intervention as soon as it was completed by the intervention group. Participants were allocated to each group based on an allocation sequence generated using a Random Allocation Software[48] to eliminate selection bias.[49] The

Table 1

Demographic characteristics of participants.

Characteristics	Levels	Intervention	WaitlistedControl group	t-test	significance	Phi and Cramer's V
Age		20.18 ± 3.15	20.57 ± 3.07	-.827	.409	
		n (%)	n (%)	χ^2	significance	
Gender	Male	49 (44.1)	62 (55.9)	3.917	.048	.151
	Female	36 (60.0)	24 (40.0)			
State of origin	Enugu	24 (82.8)	5 (17.2)	16.518	.002	.311
	Anambra	21 (45.7)	25 (54.3)			
	Imo	20 (47.6)	22 (52.4)			
	Abia	14 (36.8)	24 (63.2)			
	Ebonyi	6 (37.5)	10 (62.5)			
Diagnosed impairment	Impaired muscle power	10 (43.5)	13 (56.5)	8.220	.412	.219
	Impaired passive range of movement Limb deficiency	14 (72.2)	7 (27.8)			
	Leg length difference	13 (36.0)	5 (64.0)			
	Short stature Hypertonia	13 (59.1)	9 (40.9)			
	Ataxia	13 (56.5)	10 (43.5)			
	Athetosis	6 (40.0)	9 (60.0)			
	Visual impairement	8 (50.0)	8 (50.0)			
		6 (40.0)	9 (60.0)			
		7 (50.0)	7 (50.0)			
Athletic/game specialization	Running	18 (47.4)	20 (52.6)	8.172	.226	.219
	Jumping	7 (41.2)	10 (58.8)			
	Wheelchair racing	5 (31.2)	11 (68.8)			
	Standing throws	8 (38.1)	13 (61.9)			
	Seated throws	9 (50)	9 (50)			
	Swimming	13 (68.4)	6 (31.6)			
	Power lifting	25 (59.5)	17 (40.5)			
Average number of hours of training per week	Less than 5 hours	12 (60.0)	8 (40.0)	2.376	.305	.118
	Between 5 to 10 hours	36 (43.9)	46 (56.1)			
	More than 10 hours	37 (53.6)	32 (46.4)			

procedure adopted for assigning athletes to the groups was as described in past interventions.[50,51] After assignment to groups, the 12-week intervention program followed. After the 12th week, the Athlete Burnout Questionnaire was administered to collect post-test data. The athletes filled the Athlete Burnout Questionnaire which was collected immediately for assessment. Three months after the intervention, a follow-up program was organized. This lasted for three weeks. Data were collected at the end using the Athlete Burnout Questionnaire. The researchers with eight research assistants who are specialists in special education coordinated the intervention using English and Igbo as means of communication.

3.4. Intervention package

Albert Ellis propounded the REBT theory in 1955.[49] The digital storytelling intervention was complemented with rational-emotive behaviour therapy with digital stories to assist adolescent para-athletes to cope with and combat burnout thoughts. This was achieved by choosing carefully designed videos that told stories of lived experiences of people who have battled and successfully coped with burnout thoughts. Then, these were followed by rational emotive behaviour therapy exercises aimed at cognitive restructuring and re-education to develop rational perspectives and form a positive attitude towards sport challenges. It is believed that the intervention would equip disabled adolescent-athletes who are at risk of burnout, with coping skills and strategies, and above all, hope and encouragement to think rationally and have a positive view of life irrespective of their challenges, since according to REBT, one's quality of life is determined by the measure of his/her rational thoughts and beliefs towards life's typical challenges. Therefore, the digital storytelling intervention based on rational emotive behaviour therapy is aimed at supplanting irrational thoughts and beliefs (which could prompt burnout thoughts) with rational and healthy thoughts and beliefs through digital storytelling and a series of cognitive, behavioural and emotive techniques.[49]

During the meetings, participants were provided with digital storytelling videos with burnout themes which could be downloaded from social media sites. They were also asked to individually watch these videos at home. After watching these videos at home, participants were instructed to reflect and note via writing important lessons they learnt from the videos as these would form the basis of their group discussion during the session meetings. The intervention is divided into three sessions: a group session, a general session, and an REBT session. Each day's session meeting begins with the group discussion in small groups of 5 where participants discuss their observations and moral lessons from the burnout videos which they had watched at home. The group discussion often lasts for about 25 minutes as each group member takes some minutes to shares his/her opinion. After this group session, a general session follows where each group represented by their group leader gives a 3 minutes summary of their group discussion.

To ensure active participation, group leadership rotates among the group members for each day's meeting. Also, participants were free to communicate via English or Igbo language. Questions and answers were equally taken in the general session and this lasts for about 25 minutes. At the end of the session, the participants are divided into two groups. Each group has a rational emotive behaviour therapist who guides the athletes to identify and note their sports and non-sports related stressors,

irrational beliefs and negative thoughts. Then, the athletes were guided as they engage in the various therapeutic techniques and exercises to combat and dispute their irrational beliefs and stressors. The rational emotive behaviour therapy session was facilitated using an REBT burnout manual.[52] This session lasts for about 20 minutes. We ensured that athletes' participation in the intervention were sustained through the provision of transport incentive, light refreshment at the end of each session, and session schedule reminders via their mobile phone contact.

3.5. Method of data analysis

Blinding was implemented by de-identifying some portions of the questionnaire to avoid analyst bias. Then, data was tested to ensure it met the assumptions of the chosen statistics. Normal Q-Q plots were used to check for normality assumption. The graph shows that the data appear to be normally distributed as the data points were close to the diagonal line and show no non-linear pattern. We ensured that other assumptions of the repeated measure ANOVA were met by conducting the Mauchly test for sphericity for each of the Athlete Burnout Questionnaire subscales. The result showed that the sphericity assumption was not met for any of the subscales. Therefore, we applied the Greenhouse-Geisser correction[53] in interpreting the ANOVA results. At first, we conducted a within-between-subject factors 2-way mixed repeated-measures analysis of variance (ANOVA) to determine the main effect of treatment condition, the main effect of time (before treatment vs after treatment and follow-up); and the time × group interaction effect in the different subscales of burnout as in previous research.[54] We used partial eta squared to determine the effect size of the intervention. Since the group effect, time effect and the time × group interaction effect were all significant, a post-hoc analysis was performed with the Bonferroni correction in order to determine the specific point of significance of the intervention for the different times for each of the group. A significant value of $p = 0.05$ was used as a benchmark for result interpretation. All data processing and analysis including screening for missing values were done using IBM SPSS version 20.

4. Results

Participants' demographic information as contained in Table 1 showed that on the average, in each of the groups, participants' age were similar, about 20 years old: intervention group (age) = 20.18 ± 3.15, waitlisted control group (age) = 20.57 ± 3.07, $t(169) = -.827$, p = .409. Similarly, diagnosed impairment, game specialization and the average number of hours of training per week were not found significantly different between the two groups with p-values > .05. Majority of the athletes were males, $n = 111$; the most popular game specialization was powerlifting ($n = 42$) and the majority of the athletes trained about 5 hours and above weekly ($n = 151$). Ebonyi state produced less than ten per cent of the athletes (9.4%), the least for all the states.

Table 2 showed that overall, for the intervention group (pre-test = 32.58 ± 1.89, post-test = 26.48 ± 2.11, follow-up = 25.71 ± 2.22) average burnout scores decreased progressively over the period of intervention but this was not the case in the waitlisted control group.

From Table 3, the result of the 2-way mixed ANOVA shows that the overall main effect of time on participants' athlete burnout level was significant for each of the Athlete Burnout

Table 2

Descriptive statistics summary.

	Experimental group			Waitlisted control group		
	Pre-test	Post-test	Follow-up	Pre-test	Post-test	Follow-up
Athlete Burnout Questionnaire subscales	(Mean ± SD)	(Mean ± SD)	(Mean ± SD)	(Mean ± SD)	(Mean ± SD)	(Mean ± SD)
Emotional/physical exhaustion	10.53 ± 2.0	8.60 ± 1.92	8.40 ± 1.82	10.63 ± 2.45	11.22 ± 2.13	11.43 ± 2.07
Reduced sense of accomplishment	11.35 ± 2.05	9.22 ± 1.82	8.85 ± 1.60	11.19 ± 1.90	11.87 ± 1.35	11.91 ± 1.25
Devaluation of sports	10.69 ± 1.84	8.66 ± 1.36	8.45 ± 1.18	10.66 ± 1.83	11.30 ± 1.15	11.61 ± 1.26
Overall	32.58 ± 1.89	26.48 ± 2.11	25.71 ± 2.22	32.50 ± 1.76	34.27 ± 2.80	34.95 ± 2.57

Questionnaire subscales [Emotional/physical exhaustion: $F(1.64,276.24) = 24.55$, $p < .001$, $\eta_p^2 = .127$; Reduced sense of achievement: $F(1.59,268.72) = 37.09$, $p < .001$, $\eta_p^2 = .180$; and Devaluation of sports: $F(1.31,221.80) = 18.16$, $p < .001$, $\eta_p^2 = =.097$]. Similarly, there was a significant main effect of group on athletes' burnout score as shown in the Athlete Burnout Questionnaire subscales [Emotional/physical exhaustion: $F(1,169) = 42.98$, $p < .001$, $\eta_p^2 = .203$; Reduced sense of achievement: $F(1,169) = 67.62$, $p < .001$, $\eta_p^2 = .286$; Devaluation of sports: $F(1,169) = 101.61$, $p < .001$, $\eta_p^2 = .375$].

In addition, the interaction between Time and Group was significant as shown in the Athlete Burnout Questionnaire subscales [Emotional/physical exhaustion: $F(1.64,276.24) = 102.02$, $p < .001$, $\eta_p^2 = .127$; Reduced sense of achievement: $F(1.59, 268.72) = 125.32$, $p < .001$, $\eta_p^2 = .180$; Devaluation of sports: $F(1.31,221.80) = 88.36$, $p < .001$, $\eta_p^2 = .097$]. These results suggest that the digital storytelling intervention was significantly effective in reducing athletes' burnout thoughts both across the different time periods and within the intervention group.

Table 4 contains the Post-hoc analysis of the Within-group pairwise comparison of the effect of digital storytelling intervention on the burnout thoughts of participants. The results showed that in the experimental group, athletes' burnout thoughts were significantly reduced between pre-test/post-test and pre-test/follow-up with $p < .001$ in all subscales of the Athlete Burnout Questionnaire. However, in the waitlisted control group, such positive changes in athlete burnout within these periods were not observed. Also, as shown in Table 5, the between-group pairwise comparison of the effect of digital storytelling intervention on the burnout thoughts of adolescent athletes reveals that there was a significant difference in the burnout thoughts of athletes in the intervention and control groups at post-test and follow-up with $p < .001$ in all the subscales of the Athlete Burnout Questionnaire.

5. Discussion

The present study examined the effect of digital storytelling intervention on burnout thought of adolescent-athletes with disabilities. The study results revealed that the overall effect of time, group and time × group interaction were significant. Subsequent post-hoc analysis indicated that for within-group comparison, disabled athletes in the experimental group had significantly reduced burnout thought over time unlike those in the waitlisted control group. The between-group comparison indicated that at post-test and follow-up there was a significant difference between the average burnout scores of participants in the experimental group and the waitlisted control group. Athletes in the experimental group had lower burnout thoughts at post-test and follow-up.

The findings agree with the previous study which reported a reduction in burnout thoughts among physicians who participated in a storytelling therapy.[55] Here, as a countermeasure to burnout, participants were required to write/share stories in which they recalled moments they showed or witnessed compassion in the healthcare. By doing this, participants' burnout symptoms significantly reduced. Both the creation and viewing of digital stories can lead to new perceptions, awareness and more generative approaches to care especially among health care professionals.[56] Digital storytelling has been found to effectively improve the psychological and emotional health of adolescent students by reducing stress, anxiety, anger and depression among female adolescents.[36] The present study adopted an REBT-based digital storytelling intervention strategy to manage athlete burnout. Therefore, the findings of the present study support existing literature which has shown that REBT-informed interventions offer coping strategies and enables adolescents and youths to cope and manage symptoms of burnout.[49,50,52]

Table 3

Repeated measure ANOVA result of the overall effect of Time, Group and Time x Group interaction of digital story intervention on the burnout thoughts of adolescent athletes with disabilities.

Source		SS	df	MS	F	p	η_p^2
Time	Emotional and physical exhaustion	51.43	1.64	31.47	24.55	<.001	.127
	Reduced sense of accomplishment	77.11	1.59	48.50	37.09	<.001	.180
	Devaluation of sports	51.75	1.31	39.43	18.16	<.001	.097
Groups	Emotional and physical exhaustion	472.98	1	472.98	42.98	<.001	.203
	Reduced sense of accomplishment	437.57	1	437.57	67.62	<.001	.286
	Devaluation of sports	476.28	1	476.28	101.61	<.001	.375
Time x Groups	Emotional and physical exhaustion	213.72	1.64	130.75	102.02	<.001	.376
	Reduced sense of accomplishment	260.52	1.59	163.85	125.32	<.001	.426
	Devaluation of sports	251.85	1.31	191.90	88.36	<.001	.343

df = degree of freedom, MS = mean square, SS = sum of squares (type iii), ηp^2 = partial eta square.

Table 4

Within-group pairwise comparison of the effect of digital storytelling intervention on the burnout thoughts of adolescent-athletes with disabilities.

Athlete Burnout Questionnaire subscales	Group	(I) time	(J) time	Mean Difference (I-J)	Sig.[b]	95% Confidence interval for difference[b] Lower Bound	Upper Bound
Emotional and physical exhaustion	Experimental	1	2	1.929*	<.001	1.624	2.235
			3	2.129*	<.001	1.740	2.519
		2	1	−1.929*	<.001	−2.235	−1.624
			3	.200	.175	−.055	.455
		3	1	−2.129*	<.001	−2.519	−1.740
			2	−.200	.175	−.455	.055
	Waitlist	1	2	−.602*	.002	−1.019	−.186
			3	−.819*	<.001	−1.359	−.279
		2	1	.602*	.002	.186	1.019
			3	−.217	.476	−.589	.156
		3	1	.819*	.001	.279	1.359
			2	.217	.476	−.156	.589
Reduced sense of accomplishment	Experimental	1	2	2.129*	<.001	1.764	2.495
			3	2.494*	<.001	2.016	2.972
		2	1	−2.129*	<.001	−2.495	−1.764
			3	.365	.063	−.014	.744
		3	1	−2.494*	<.001	−2.972	−2.016
			2	−.365	.063	−.744	.014
	Waitlist	1	2	−.711*	<.001	−1.141	−.280
			3	−.747*	<.001	−1.182	−.312
		2	1	.711*	<.001	.280	1.141
			3	−.036	1.000	−.150	.078
		3	1	.747*	<.001	.312	1.182
			2	.036	1.000	−.078	.150
Devaluation of Sports	Experimental	1	2	2.035*	<.001	1.669	2.402
			3	2.247*	<.001	1.797	2.697
		2	1	−2.035*	<.001	−2.402	−1.669
			3	.212	.189	−.063	.486
		3	1	−2.247*	<.001	−2.697	−1.797
			2	−.212	.189	−.486	.063
	Waitlist	1	2	−.651*	.027	−1.245	−.056
			3	−.976*	.001	−1.622	−.330
		2	1	.651*	.027	.056	1.245
			3	−.325*	.001	−.543	−.107
		3	1	.976*	.001	.330	1.622
			2	.325*	.001	.107	.543

Based on estimated marginal means. b Adjustment for multiple comparisons: Bonferroni. *The mean difference is significant at the.05 level.

The findings of the present study are significant in several ways. First, studies on effective intervention measures for reducing burnout thoughts among athletes are scarce and much more are those studies meant to provide intervention for disabled athletes. In Nigeria, in particular, no such study exists. Therefore, the findings of the present study provide an evidence-based strategy through which the quality of life in general and sports engagement of adolescent-athletes with disabilities may be improved through effective management and reduction of athlete burnout thought. Second, since studies which share similar objectives with the present study are scarce, the findings of the present study could serve as a springboard and a call to action on what could be possible as far as combating burnout thought among (disabled) athletes is concerned. It could prompt and guide future research in the area particularly in Nigeria and other developing countries that have cases of poor treatment of athletes with disabilities. Third, the findings of the present study have shown that REBT-informed digital storytelling could suit certain typical situations. In the present study, the intervention consisted of a digital storytelling session supplemented with REBT sessions. This ensured that the benefits of both strategies were maximized.

This equally constitutes a major strength of the present study. Furthermore, the present study focused on a subset of a very significant population – the adolescent population. Adolescents are at a critical stage of life's developmental process replete with challenges and crises. Several studies have made efforts to provide interventions for this group in diverse areas. The present study serves as a significant contribution towards helping adolescents (athletes with disabilities) cope with burnout.

6. Limitations and suggestion for future study

Despite the potential benefits of the present study, its findings are not devoid of certain limitations. The present study excluded adolescent-athletes with intellectual disabilities and those with hearing loss. As such, its findings may not be generalized to the overall population of adolescent-athletes with disabilities. Future studies could consider similar intervention for these excluded samples for possible comparison and generalization of findings. Also, since there are very few studies in the area of interest of the present study, it could be argued that the findings of the present study at best is foundational and serve primarily to arouse

Table 5

Between-group pairwise comparison of the effect of digital storytelling intervention on the burnout thoughts of adolescent athletes with disabilities at various times.

Athlete Burnout Questionnaire subscale	TIME	(I) group	(J) group	Mean Difference (I-J)	Sig.[a]	95% Confidence Interval for Difference[a]	
						Lower Bound	Upper Bound
Emotional and physical exhaustion	Pre-test	Experimental	Waitlist	−.165	.640	−.864	.534
		Waitlist	Experimental	.165	.640	−.534	.864
	Post-test	Experimental	Waitlist	−2.518[*]	<.001	−3.173	−1.862
		Waitlist	Experimental	2.518[*]	<.001	1.862	3.173
	Follow-up	Experimental	Waitlist	−3.352[*]	<.001	−4.010	−2.695
		Waitlist	Experimental	3.352[*]	<.001	2.695	4.010
Reduced sense of accomplishment	Pre-test	Experimental	Waitlist	.165	.575	−.417	.747
		Waitlist	Experimental	−.165	.575	−.747	.417
	Post-test	Experimental	Waitlist	−2.659[*]	<.001	−3.134	−2.184
		Waitlist	Experimental	2.659[*]	<.001	2.184	3.134
	Follow-up	Experimental	Waitlist	−3.341[*]	<.001	−3.906	−2.776
		Waitlist	Experimental	3.341[*]	<.001	2.776	3.906
Devaluation of Sports	Pre-test	Experimental	Waitlist	.059	.855	−.580	.698
		Waitlist	Experimental	−.059	.855	−.698	.580
	Post-test	Experimental	Waitlist	−2.635[*]	<.001	−3.026	−2.245
		Waitlist	Experimental	2.635[*]	<.001	2.245	3.026
	Follow-up	Experimental	Waitlist	−3.477[*]	<.001	−4.010	−2.945
		Waitlist	Experimental	3.477[*]	<.001	2.945	4.010

Based on estimated marginal means. b Adjustment for multiple comparisons: Bonferroni. [*]The mean difference is significant at the.05 level.

researchers' interest in conducting studies aimed at combating burnout among different groups of special needs population especially in Nigeria and other developing countries. Furthermore, the self-report method was used in the present study for data collection. This method has been noted as being susceptible to bias. While the present study may have put measures in place to control this, there is no certainty that the results are bias-free. Another limitation of this study is the lack of other measures of the impact of the intervention. Therefore, future studies could adopt triangulation by using other qualitative measures for data collection to minimize self-report bias. Again, the present study conducted a single follow-up session which may not be effective in detecting all cases of possible future relapse. Therefore, future studies could consider multiple follow-up sessions to effectively monitor possible relapse trend and truly measure the long-term effect of digital storytelling intervention for athlete burnout among adolescents with disabilities. Finally, future investigators should seek to find out whether digital storytelling intervention based on REBT would exert a meaningful effect on adolescent-athletes' mood, practicing the sport, and performance in the sport.

7. Conclusion

In conclusion, digital story intervention is an effective intervention for reducing burnout thoughts among adolescent-athletes with disabilities. Thus, this study serves as a significant contribution toward helping adolescent-athletes with disabilities cope with burnout. Future studies should consider using this intervention in helping adolescent-athletes with intellectual disabilities and those with hearing loss to manage burnout thoughts.

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References

[1] Smith AL, Gustafsson H, Hassmén P. Peer motivational climate and burnout perceptions of adolescent athletes. Psychol Sport Exerc 2010; 11:453–60.

[2] Eklund RC, DeFreese J. Athlete burnout: what we know, what we could know, and how we can find out more. Int J Appl Sports Sci 2015;27:63–75.

[3] Gustafsson H, Hassmén P, Kenttä G, et al. A qualitative analysis of burnout in elite Swedish athletes. Psychol Sport Exerc 2008;9:800–16.

[4] Raedeke TD. Is athlete burnout more than just stress? A sport commitment perspective. J Sport Exercise Psy 1997;19:396–417.

[5] Smith RE. Toward a cognitive-affective model of athletic burnout. J Sport Exercise Psy 1986;8:36–50.

[6] Coakley J. Burnout among adolescent athletes: a personal failure or social problem? Sociol Sport J 1992;9:271–85.

[7] Ryan RM, Deci EL. Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. Am Psychol 2000;55:68.

[8] Gustafsson H, Kenttä G, Hassmén P. Athlete burnout: an integrated model and future research directions. Int Rev Sport Exerc Psychol 2011;4:3–24.

[9] Gustafsson H, DeFreese J, Madigan DJ. Athlete burnout: review and recommendations. Curr Opin Psychol 2017;16:109–13.

[10] Brenner JS. Sports specialization and intensive training in young athletes. Pediatrics 2016;138:e20162148.

[11] Dworkin JB, Larson R, Hansen D. Adolescents' accounts of growth experiences in youth activities. J Youth Adolesc 2003;32:17–26.

[12] Logan K, Cuff S. Organized sports for children, preadolescents, and adolescents. Pediatrics 2019;143:e20190997.

[13] Slingerland M, Borghouts LB, Hesselink MK. Physical activity energy expenditure in Dutch adolescents: contribution of active transport to school, physical education, and leisure time activities. J School Health 2012;82:225–32.

[14] Moss T, Landon TJ, Fleming A. Sports and disability: enhanced health, self-efficacy, and social inclusion through athletic participation. Rev Disabil Stud Int J 2017;13:1–9.

[15] Anderson LS, Heyne LA. Physical activity for children and adults with disabilities: An issue of "amplified" importance. Disabil Health J 2010;3:71–3.

[16] Kroll T, Kehn M, Ho P-S, et al. The SCI exercise self-efficacy scale (ESES): development and psychometric properties. Int J Behav Nutr Phy 2007;4:34.

[17] Murphy NA, Carbone PS. Promoting the participation of children with disabilities in sports, recreation, and physical activities. Pediatrics 2008;121:1057–61.

[18] Aguiar LT, Martins JC, Nadeau S, et al. Efficacy of interventions to improve physical activity levels in individuals with stroke: a systematic review protocol. BMJ open 2017;7:e012479.

[19] Dixon-Ibarra A, Driver S. The role of self-efficacy in physical activity for person with disabilities. Palaestra 2013;27:31–6.

[20] Nosek MA, Hughes RB, Robinson-Whelen S, et al. Physical activity and nutritional behaviors of women with physical disabilities: physical, psychological, social, and environmental influences. Women's Health Issues 2006;16:323–33.

[21] Brenner JS. Overuse injuries, overtraining, and burnout in child and adolescent athletes. Pediatrics 2007;119:1242–5.

[22] DeFreese J, Smith AL. Teammate social support, burnout, and self-determined motivation in collegiate athletes. Psychol Sport Exerc 2013;14:258–65.

[23] Van heijden F, Gea Dillingh G, Bakker A, et al. Suicidal thoughts among medical residents with burnout. Arch Suicide Res 2008;12:344–6.

[24] Pandey GN. Biological basis of suicide and suicidal behavior. Bipolar Disord 2013;15:524–41.

[25] Gustafsson H, Hancock DJ, Côté J. Describing citation structures in sport burnout literature: A citation network analysis. Psychol Sport Exerc 2014;15:620–6.

[26] Lauff J. Developing country participation in international disability sport competition: a historical perspective (Master's thesis, Norwegian School of Sport Science). 2009. Available at https://www.sportanddev.org/sites/default/files/downloads/70developing_country_participation_in_international_disability_sport_competition.pdf [accessed December 15, 2019]

[27] Brittain I. The Impact of Resource Inequality upon Participation and Success at the summer and winter Paralympic Games. Journal of the Paralympic Research Group 2019;12:41–67.

[28] World Health Organization. World report on disability 2011: World Health Organization; 2011.

[29] World Para Athletics. World Para Athletics: Rules and regulations 2018-2019. 2018.

[30] Li C, Zhu Y, Zhang M, et al. Mindfulness and athlete burnout: a systematic review and meta-analysis. Int J Environ Res Public Health 2019;16:449.

[31] Hayes SC. Acceptance and commitment therapy, relational frame theory, and the third wave of behavioral and cognitive therapies. Behav Ther 2004;35:639–65.

[32] Adie JW, Duda JL, Ntoumanis N. Perceived coach-autonomy support, basic need satisfaction and the well-and ill-being of elite youth soccer players: a longitudinal investigation. Psychol Sport Exerc 2012;13:51–9.

[33] Robin B. The power of digital storytelling to support teaching and learning. Digit Educ Rev 2016;17–29.

[34] Robin BR. Digital storytelling: a powerful technology tool for the 21st century classroom. Theory Pract 2008;47:220–8.

[35] Lambert J, Hessler B. *Digital storytelling: capturing lives, creating community*: Routledge; 2018.

[36] Goodman R, Newman D. Testing a digital storytelling intervention to reduce stress in adolescent females. Storytell Self Soc 2014;10:177–93.

[37] Beltrán R, Begun S. It is medicine': narratives of healing from the Aotearoa Digital Storytelling as Indigenous Media Project (ADSIMP). Psychol Dev Soc 2014;26:155–79.

[38] Willox AC, Harper S, Edge V, et al. Storytelling in a digital age: digital storytelling as an emerging narrative method for preserving and promoting indigenous oral wisdom. Qual Res 2012;13:127–47.

[39] Coleman L, Ramm J, Cooke R. The effectiveness of an innovative intervention aimed at reducing binge drinking among young people: results from a pilot study. Drugs: Educ Prev Polic 2010;17:413–30.

[40] Ferrari M, Rice C, McKenzie K. ACE Pathways Project: Therapeutic catharsis in digital storytelling. Psychiatr Serv 2015;66:556.

[41] Ezegbe B, Eseadi C, Ede MO, et al. Efficacy of rational emotive digital storytelling intervention on knowledge and risk perception of HIV/AIDS among schoolchildren in Nigeria. Medicine(Baltimore) 2018;97:e12910.

[42] Ezegbe BN, Eseadi C, Ede MO, et al. Rational emotive digital storytelling therapy for improving HIV/AIDS knowledge and risk perception among schoolchildren: a group randomized trial. J Ration Emot Cogn Behav Ther 2019;37:358–74.

[43] Ofoegbu TO, Otu MS, Ibenegbu C, et al. Impact of an educational digital storytelling intervention on HIV risk perception among Nigerian adolescents. J Int Med Res 2020;48:0300060519854635.

[44] Faul F, Erdfelder E, Lang A-G, et al. G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. Behav Res Methods 2007;39:175–91.

[45] Cohen J. Statistical power analysis for the behavioral sciences. 2nd ednHillsdale: Erlbaum Associates; 1988.

[46] Raedeke TD, Smith AL. Development and preliminary validation of an athlete burnout measure. J Sport Exercise Psy 2001;23:281–306.

[47] 2016;Guedes DP, Souza ROD. Psychometric properties of the athlete burnout questionnaire for young Brazilian athletes J. Phys. Educ. 27: e2708.

[48] Saghaei M. Random allocation software for parallel group randomized trials. BMC Med Res Methodol 2004;4:26.

[49] Igbokwe UL, Onyechi KC, Ogbonna CS, et al. Rational emotive intervention for stress management among English education under-graduates: implications for school curriculum innovation. Medicine (Baltimore) 2019;98:e17452.

[50] Onuigbo LN, Eseadi C, Ugwoke SC, et al. Effect of rational emotive behavior therapy on stress management and irrational beliefs of special education teachers in Nigerian elementary schools. Medicine (Baltimore) 2018;97:e12191.

[51] Omeje JC, Otu MS, Aneke AO, et al. Effect of rational emotive health therapy on alcohol use among community-dwelling, HIV-positive Patients. Medicine(Baltimore) 2018;97:e11688.

[52] Ogbuanya TC, Eseadi C, Orji CT, et al. Effect of rational-emotive behavior therapy program on the symptoms of burnout syndrome among undergraduate electronics work students in Nigeria. Psychol Rep 2019;122:4–22.

[53] Field A. Discovering Statistics: Repeated measures ANOVA. 2016. Available at: http://www.discoveringstatistics.com/docs/repeatedmeas ures.pdf [Accessed March 5, 2019].

[54] Igbokwe UL, Nwokenna EN, Eseadi C, et al. Intervention for burnout among English education undergraduates: implications for curriculum innovation. Medicine(Baltimore) 2019;98:e16219.

[55] Robeznieks A. Physician burnout reduced by telling stories of compassion. November, 2016. Available at https://www.hhnmag.com/ articles/7808-physician-burnout-reduced-by-telling-stories-of-compas sion. [accessed 19 December, 2019]

[56] Laing CM, Moules NJ, Estefan A, et al. Stories take your role away from you": understanding the impact on health care professionals of viewing digital stories of pediatric and adolescent/young adult oncology patients. J Pediatr Oncol Nurs 2017;34:261–71.