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THE EFFECTS OF INTRADIALYTIC EXERCISE PLUS MUSIC ON ANXIETY

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INTRODUCTION

Hemodialysis (HD) patients experience high levels of anxiety, especially during dialysis treatment, affecting their quality of life negatively. Studies have shown that both exercise training and listening of music can reduce stress in diseased individuals. In our previous study, a 6-month combination of intradialytic exercise and music was found to improve the cardiac autonomic disturbances significantly.

RESULTS

6MWT variable Mean ± standard deviation per group before and after the intervention and corrected values



Functional capacity 6MWT (m)

AIM

The aim of this study was to investigate the effectiveness of a short-term intradialytic exercise program, accompanied with music of preference on the levels of anxiety in HD patients. The originality of the study consists in that we examined the effect of the combination of exercise and listening to music during HD in stress measured both subjectively and objectively.

METHODS

PATIENTS

Inclusion criteria

Exclusion criteria

Age \geq 20 years old Treatment \geq 6 months on HD therapy HD 3d / wk, 4 hours / per session Systolic BP \leq 180 mmHg Diastolic BP \geq 95 mmHg

Cognitive or hearing disorders Orthopedic problems Myocardial infarction at last 6 months Unstable angina pectoris Antidepressants or psychotropic medications



*: p<0.05, ***: p<0.001
a: Statistically significant change of the Exercise Group
b: Statistically significant difference between the Exercise Group and the Control Group after intervention
c: Statistically significant difference in changes between the Exercise and Control Groups

Anxiety state

Objective measurement

Cooking Hacks' company sensors platform

Skin Conductance Response Time series for the Exercise Group Skin Conductance Response Variations for Exercise and Control Group



Skin Conductance Response Time series for the Control Group





preference music	
Drop out=1	

n=15

No extra intervention (control group) n=15

Clinical characteristics

Age : 47.1 ± 15.2 yrs	
Years on HD : 7.3 ± 5 yrs	
Hb : 11.1 ± 1.5 g/dl	

Age : 63.8 ± 9.5 * yrs Years on HD : 7.5 ± 6 yrs Hb : 11.3 ± 1.3 g/dl

*p<0.05, thus statistics measures were calculated with adjustments for age

Intervention program (12 weeks)

Exercise with :

Music during intradialytic exercise program: ➤Patients' preference music

Stationary bicycles

Strengthening exercises 3d/wk, 30′-60′

Intradialytic exercise program with stationary bicycles and strengthening exercises



The dialysis prescription, medications and the level of anemia remained constant during the study.

7000 50 100 150 200 250 300 350 400 450 500 Time (s)

STAI Questionnaire

S-Anxiety variable Mean ± standard deviation per group fore and after the intervention in corrected values







Pearson's correlation coefficient between changes of the variables for the Exercise Group

		6MWT (after - before)	S-Anxiety (after - before)	T-Anxiety (after - before)	Hb (after - before)	Mean (after - before)
6MVVT (after - before)	Pearson Correlation	1	0.495	0.498	0.1	-0.137
	Sig. (2-tailed)		0.061	0.059	0.735	0.688
	Ν	15	15	15	14	11

Although the level of both State and Trait Anxiety was decreased after the 3-month intervention program, there was no statistically significant difference.

MEASUREMENTS

At baseline and the end of the study all patients underwent:

Six Minute Walking Test (6MWT): Functional capacity

Assessment of Anxiety:

- □ State-Trait Anxiety Inventory (STAI): Subjective measurement of the level of anxiety
- Cooking Hacks' company sensors platform: Objective measurement of the level of anxiety by Skin Conductance Response



6MWT Estimation of functional capacity

Disass provide the following information:			STAL Same V.1					
Please provide the following in	formation.							
Name	Date	S	_		Name	_Date	_	-
Age Ge	nder (Circle) M F	Т	_		DIRECTIONS	5	24	
DIREC	IONS:	\$0.	4		A number of statements which people have used to describe themselves are given below.	200 200	1	3
A number of statements which people have u Read each statement and then circle the app to indicate how you feel right now, that is, at t	sed to describe themselves are given below. opriate number to the right of the statement his moment. There are no right or wrong	South N. S.	CRA SRIT	2	Head table statement and uptor droll the space-product ments of the regard of the transmission. It is indicate heavy upgermethy freed. There are no right of verong answers. Do not spend too much there on any one statement but give the answer which seems to describe how you generatly feed.	ALCON A	AN AN	No.
answers. Do not spend too much time on any seems to describe your present feelings best	rone statement but give the answer which	1 4	9 4	0	21. I feel pleasant		2	
1. I feel calm		1	2 3	4	22. I feel nervous and restless		2	
2. I feel secure		1	2 3	4	23. I feel satisfied with myself		2	
3. I am tense		1	2 3	4	24. I wish I could be as happy as others seem to be		2	
4.1 feel strained		1	2 3	4	25. I feel like a failure		2	
5. I feel at ease			2 3	4	26. I feel rested	1	2	
6. I feel upset		1	2 3	4	27. I am "calm, cool, and collected"	1	2	
7.1 am presently worrying over pos	sible misfortunes	1	2 3	4	28. I feel that difficulties are piling up so that I cannot overcome them		2	
8. I feel satisfied		1	2 3	4	29. I worry too much over something that really doesn't matter		2	
9. I feel frightened		1	2 3	4	30.1 am happy		2	
10. I feel comfortable		1	2 3	4	31. I have disturbing thoughts	1	2	
11. I feel self-confident		1	2 3	4	32. I lack self-confidence.		2	
12.1 feel nervous		1	2 3	4	33. I feel secure		2	
13. I am jittery		1	2 3	4	34. I make decisions easily		2	
14. I feel indecisive		1	2 3	4	g 35. I feel inadequate	1	2	
15. I am relaxed		1	2 3	4	₹ 36.1 am content		2	
16. I feel content		1	2 3	4	37. Some unimportant thought runs through my mind and bothers me	1	2	
17. I am worried		1	2 3	4	38. I take disappointments so keenly that I can't put them out of my mind	1	2	
18. I feel confused		1	2 3	4	39. I am a steady person		2	
19. I feel steady		1	2 3	4	40. I get in a state of tension or turmoil as I think over my recent concerns			
20. I feel pleasant			2 3	4	and interests		2	

State-Trait Anxiety Inventory (STAI) Self-reported psychological inventory pertaining to anxiety affect



Cooking Hacks' sensors platform for Skin Conductance Response

There seems to be a correlation between the improvement of functional capacity and the level of anxiety in the trained HD patients.

CONCLUSIONS

A short-term intradialytic exercise training program accompanied with music of the patients' preference improves their functional capacity, without clearly affecting the level of anxiety in HD patients. Thus, a longer intervention may be required.

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