



The 10th

International Congress on Pulmonary Diseases, Intensive Care and Tuberculosis

16-18 OCTOBER 2024 | Tehran-Iran

E-Poster Presentation

The Effects of Online Combined Endurance and Aerobic Exercises on Physical Functional Performance and Plasma Amino Acid Levels in Chronic Obstructive Pulmonary Disease Patients, with a Focus on Changes in Branched-Chain Amino Acids Profiles

Effects of Online Exercise on Amino Acids and Performance in COPD

nrItld10-01520118

Rostam Yazdani¹, Samira Nakhaei², Mohsen Shafiepour¹, Reyhaneh Rezaie³, Shirin Yazdani³, Nazanin Shahabinejad³

¹. Assistant Professor of Pulmonary Diseases, Department of Internal Medicine, Afzalipour Hospital, Kerman University of Medical Sciences, Kerman, Iran

². Assistant Professor of Internal Medicine, Clinical Research Development Unit, Afzalipour Hospital, Kerman University of Medical Sciences, Kerman, Iran; Department of Internal Medicine, Kerman University of Medical Sciences, Kerman, Iran

³. Student Research Committee, Kerman University of Medical Sciences, Kerman, Iran

Introduction



The plasma concentration of free amino acids reflects the balance between exogenous absorption and internal protein metabolism, which is influenced by hormones, vitamins, and pathological conditions.

Chronic diseases can disrupt this balance, leading to either decreased or increased protein metabolism, with the latter causing accelerated protein loss and negative outcomes such as impaired recovery and reduced protein replacement.

Maintaining normal protein metabolism through proper nutrition and interventions is crucial. Hypoxia has been shown to hinder protein synthesis and increase amino acid loss, highlighting the need for further research on key amino acids

conditions such as chronic obstructive pulmonary disease (COPD). Exercise has proven beneficial in improving muscle mass and respiratory function in COPD patients, yet access to pulmonary rehabilitation remains limited.

Telerehabilitation, recommended by medical societies as an alternative, may offer long-term benefits, allowing patients to integrate exercise into daily life and improving compliance, physical activity, and quality of life.



Research Theories



Exercise-induced Metabolic Adaptation



Skeletal Muscle Hypothesis in COPD



Pulmonary Rehabilitation Theory



A.A Alteration in Chronic Disease

Objective

We aimed to investigate the impact of online combined exercises on both BCAA profiles and physical performance in participants with COPD



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Experimental



Study Design:



Non Randomized Clinical Trial

Participants:



22 male COPD patients participated in the study

Intervention:



A supervised online combined endurance and aerobic exercise program

Measured Outcomes:



**1. Serum levels of BCAAs
2. Physical performance tests**



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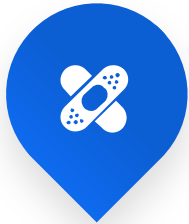
Nazanin
Shahabinejad

Experimental

(EXERCISE PROTOCOL)



Icon Vector



01

Introductory Session



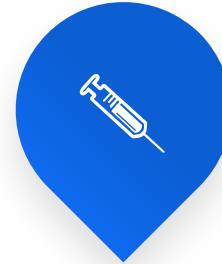
02

Warming up the area
with aerobic and
breathing exercises
for about 15 minutes



03

Aerobic exercise for
about 20 minutes



04

Strength training with
dumbbells and sports
band for about 15
minutes



05

Cool the part
focusing on flexibility
for about 15 minutes



Icon Vector



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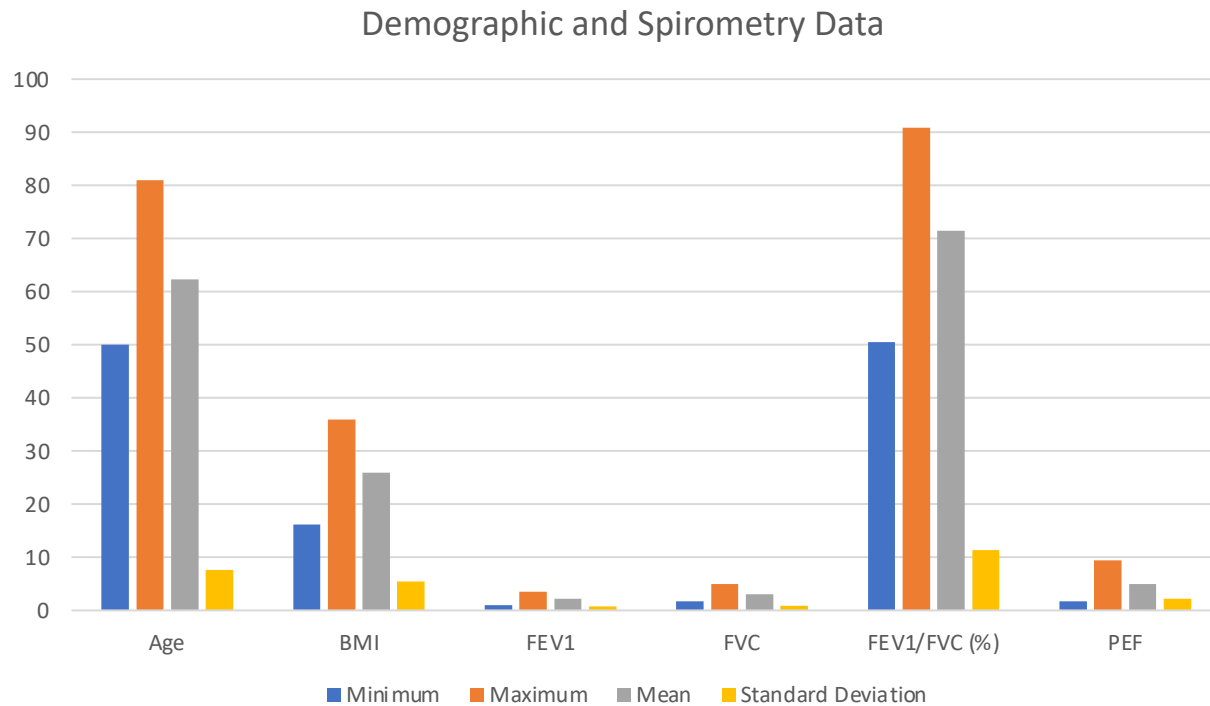
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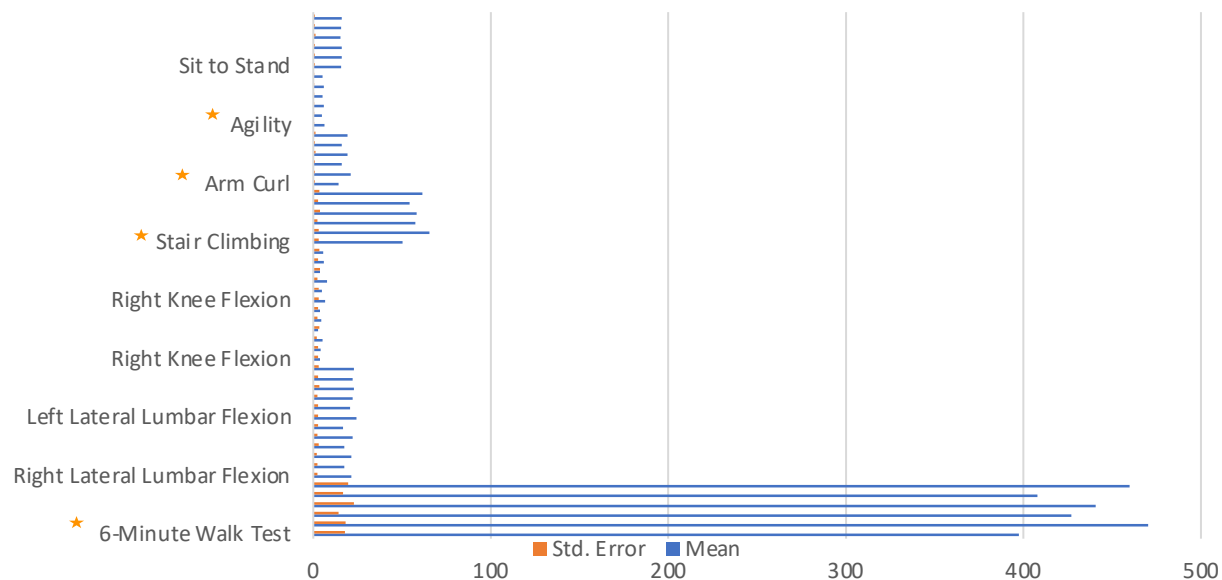
5

Results & Discussion



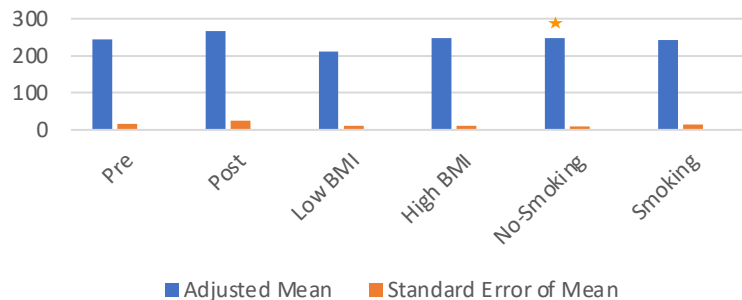
Results & Discussion

Physical Performance Parameters

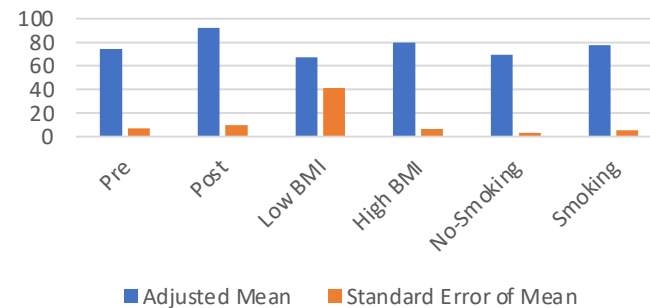


Results & Discussion

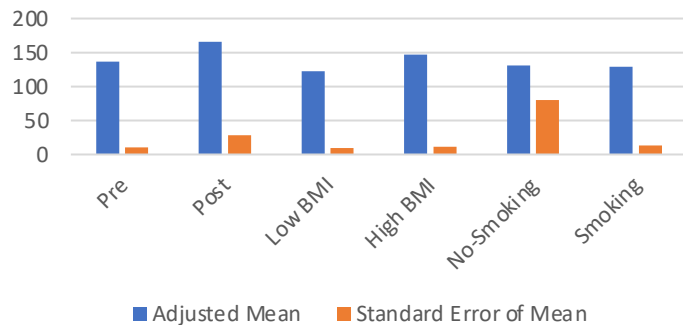
Plasma Level of Valine



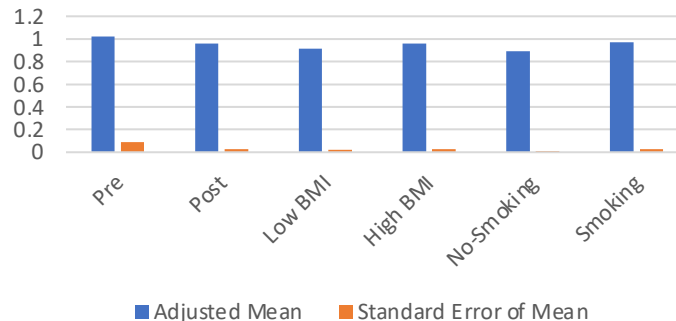
Plasma Level of Isoleucine



Plasma Level of Leucine



Plasma Level of Alloisoleucine



Results & Discussion

01

COPD BURDEN

02

COPD COMPLICATION

03

ROLE OF METABOLOMICS

04

A.A METABOLISM IN COPD

05

MUSCLE WASTING MECHANISM

06

SHIFT IN COPD TREATMENT

07

PR / TELE-REHABILITATION POTENTIAL

08

STUDY RESULTS ON PHYSICAL
PERFORMANCE

08

Variability in Study Outcome



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Conclusion



Icon Vector

Conclusion



Online combined exercises seem beneficial for enhancing physical function but do not induce significant alterations in serum levels of BCAA.

Clinical Relevance



This study supports the use of online exercise programs to improve the physical capabilities of COPD patients, though further research may be needed to explore the metabolic implications

Future Studies



- Longer intervention durations
- Larger sample sizes
- Exploration of other metabolic markers related to exercise in COPD patients
- Measurement of muscle amino acid

Potential for AI & Technology



Integration of AI-driven programs for personalized exercise plans in COPD management





THANK YOU

Student Research Committee, School of Medicine, Kerman University of Medical Sciences, Kerman, Iran.

n.shahabi@kmu.ac.ir

+989132428232