Investigating the Impact of kingnature NADH Vida on Physical Performance and Cardiovascular Health: A Comprehensive Analysis

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Abstract:

This scientific report presents a detailed investigation into the effects of the dietary supplement kingnature NADH Vida on the tolerance to physical activity, physical performance, and cardiovascular health of 16 male volunteers from a medical university. The study was conducted over a period of three weeks, with participants randomly assigned to either an experimental group receiving NADH or a control group receiving a placebo. The research design included a thorough examination using the PWC170 test to assess tolerance to physical exertion, measurement of maximum oxygen consumption (VO2 max), and evaluation of early recovery after dosed physical exertion. The study incorporates assessments of heart rate, blood pressure, and the physiological basis of the PWC170 test. Results are analyzed using statistical methods.

Introduction:

The aim of this study was to investigate the impact of the supplement "NADH Vida" on tolerance to physical activity in a cohort of 16 male volunteers. The research program included the development of a comprehensive methodology, recruitment of volunteers, and the formation of experimental and control groups. The chosen technique for assessing tolerance was the PWC170

test, supplemented by measurements of heart rate and blood pressure, providing a holistic evaluation of physical performance and cardiovascular health.

Participants:

Sixteen healthy male volunteers participated in the study. They were divided into two groups, experimental and control, with no significant differences in age or anthropometric indicators. The study adhered to ethical standards and guidelines, ensuring the well-being and informed consent of the volunteers.

Research Design:

The PWC170 test, a widely accepted method for evaluating aerobic capacity and VO2 max, was employed. The study involved two examinations: one before the start of the supplement regimen and the other after three weeks of taking NADH or a placebo. The tests were complemented by heart rate and blood pressure measurements to assess early recovery after physical exertion.

Methods:

The PWC170 test, involving two load levels, was conducted using a bicycle ergometer. Heart rate and blood pressure were measured before, during, and after the test. Maximum oxygen consumption (VO2 max) was calculated using a formula for untrained healthy individuals. Statistical data processing was performed using the SPSS Statistics program.

Results:

The team of researchers meticulously collected and analyzed data from individual protocols, which included reports on changes in heart rate and blood pressure during testing, recovery dynamics, and values of PWC170, VO2 max, and specific MSC obtained from the first and second examinations.

To assess the impact of oral intake of NADH on physical endurance, the information regarding the intake of NADH or placebo was disclosed, forming two groups: the main ("NADH") and the control ("control"). The summarized results are presented in Tables 1, 2, and 3, illustrating average values of indicators reflecting the level of tolerance to physical exertion at the time of the first and second examinations in both groups.

Table 1: The Effect of the Drug on the Level of PWC170 and VO2 max

		NADH		**control**	
		before	**After**	**before**	**after**
PWC170	watt	165,9±9,7	208,4±8,2^*	185,0±9,9	175,6±8,7
VO2 max	ml×min^{-1}	1233,7±36,6^	1528,6±20,1^*	1477,0±40,1	1456,4±26,5
VO2 max/b.w.	ml·min-1×kg-1	17,1±1,1	21,3±0,2^*	19,1±1,2	18,8±1,1

Notes:

NADH - main group; control - control group; before - the first examination (before taking the drug or placebo); after - the second examination (after three weeks of taking the drug or placebo); ^ - reliably relative to the control; * - reliably relative to the condition before taking the drug.

Figure 1: The Influence of NADH on Tolerance to Physical Exertion (PWC170)

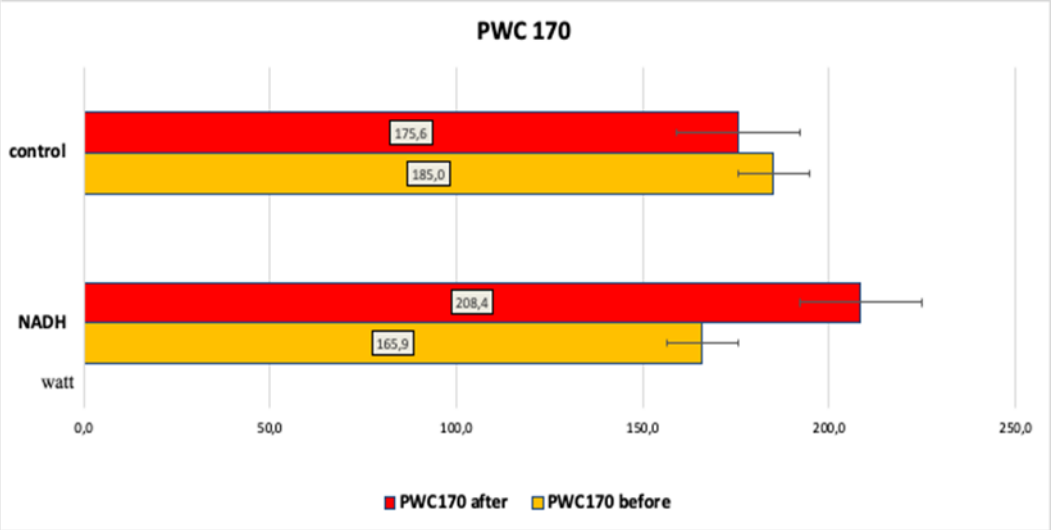


Figure 2: The Influence of NADH on Maximal Oxygen Consumption (VO2 max)

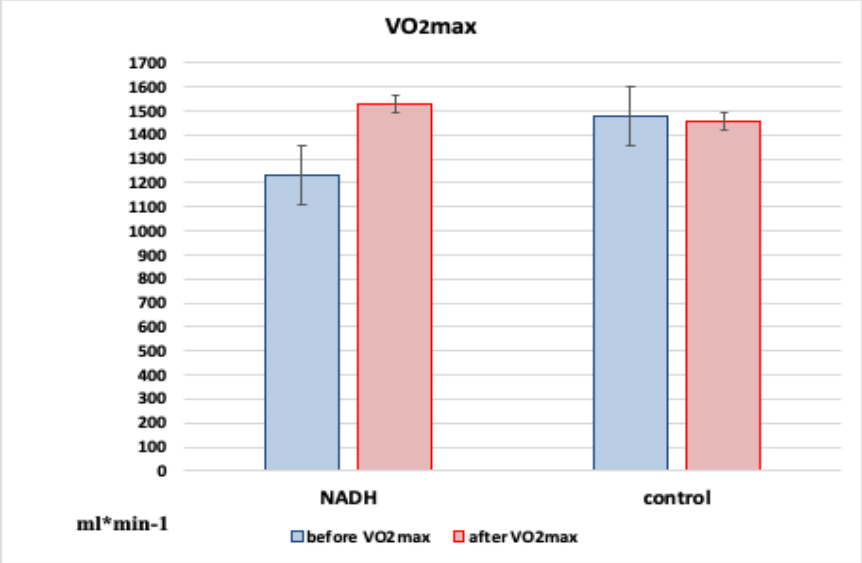
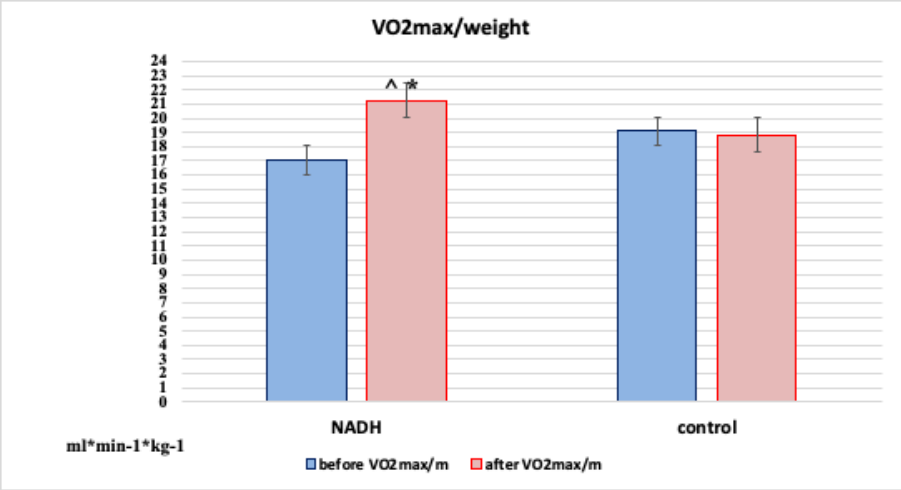


Figure 3: Influence of NADH on Maximum Oxygen Consumption Normalized to Body Weight (VO2 max/b.w.)



Effect on Physical Performance (PWC170):

Control group exhibited slightly higher initial PWC170.

After three weeks, the NADH group demonstrated a noteworthy 25.6% increase in PWC170 compared to control.

Interpretation: NADH significantly improved the participants' ability to endure physical exertion, suggesting enhanced fitness and stamina.

Impact on Maximum Oxygen Consumption (VO2 max):

Control group showed higher baseline VO2 max.

After three weeks, the NADH group displayed a substantial 23.9% increase in VO2max, surpassing the control.

Interpretation: NADH positively influenced the participants' aerobic capacity, indicating potential benefits for individuals under stress without regular physical training.

Table 2

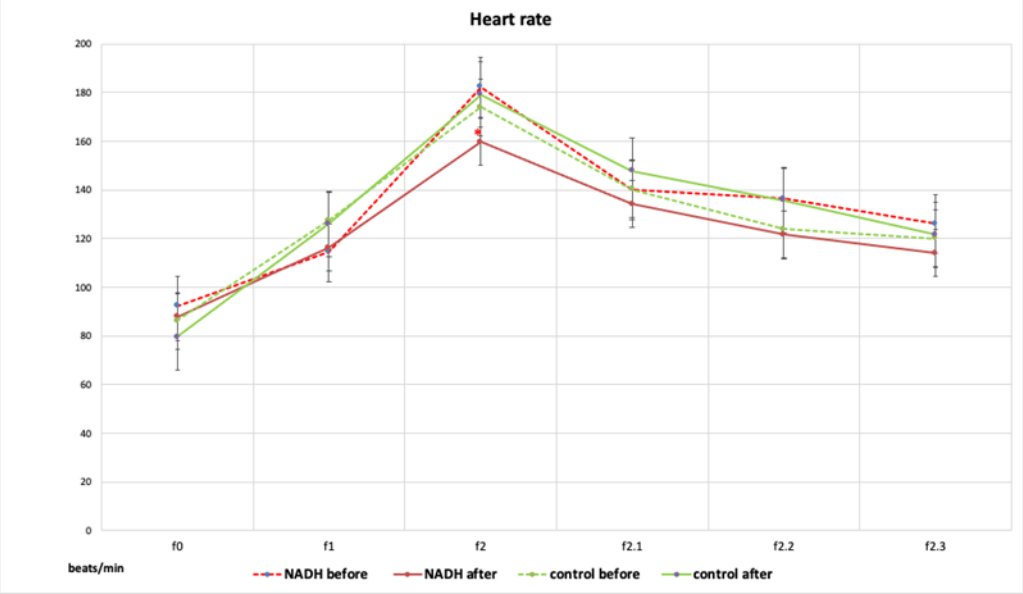
Heart rate during exercise and in the first minutes of recovery after the PWC170 test

		NADH		control	
		before	After	Before	after
f0	min^{-1}	92,3±1,4	87,8±1,2	86,3±2,5	79,5±3,4
f1	min^{-1}	114,8±4,6	116,3±2,7^	127,5±4,7	126,0±3,4
f2	min^{-1}	182,3±3,7	159,8±2,4^*	174,0±3,4	179,3±2,8
f2.1	min^{-1}	140,3±2,6	134,3±2,1^*	140,3±2,7	147,8±2,2
f2.2	min^{-1}	136,5±2,9	121,5±2,7^*	123,8±2,4	135,8±3,2
f2.3	min^{-1}	126,0±1,7	114,0±1,9^*	120,0±2,1	121,5±3,1

Note, here and further: f – heart rate, f0 – before the PWC170 test, f1 – after the first load, f2 - after the second load, f2.1 - after 1 min after the second load, f2.2 - after 2 min after the second load, f2.3 - 3 minutes after the second load.

Figure 4

Heart rate dynamics during testing and recovery after the PWC170 test



The NADH group exhibited a lower heart rate post-exercise after three weeks, indicating improved adaptability of the cardiovascular system.

Control group showed no significant alterations in heart rate dynamics.

Interpretation: NADH supplementation contributes to enhanced central hemodynamics and faster recovery after physical exertion.

Table 3

Blood pressure during exercise and in the first minutes of recovery after the PWC170 test

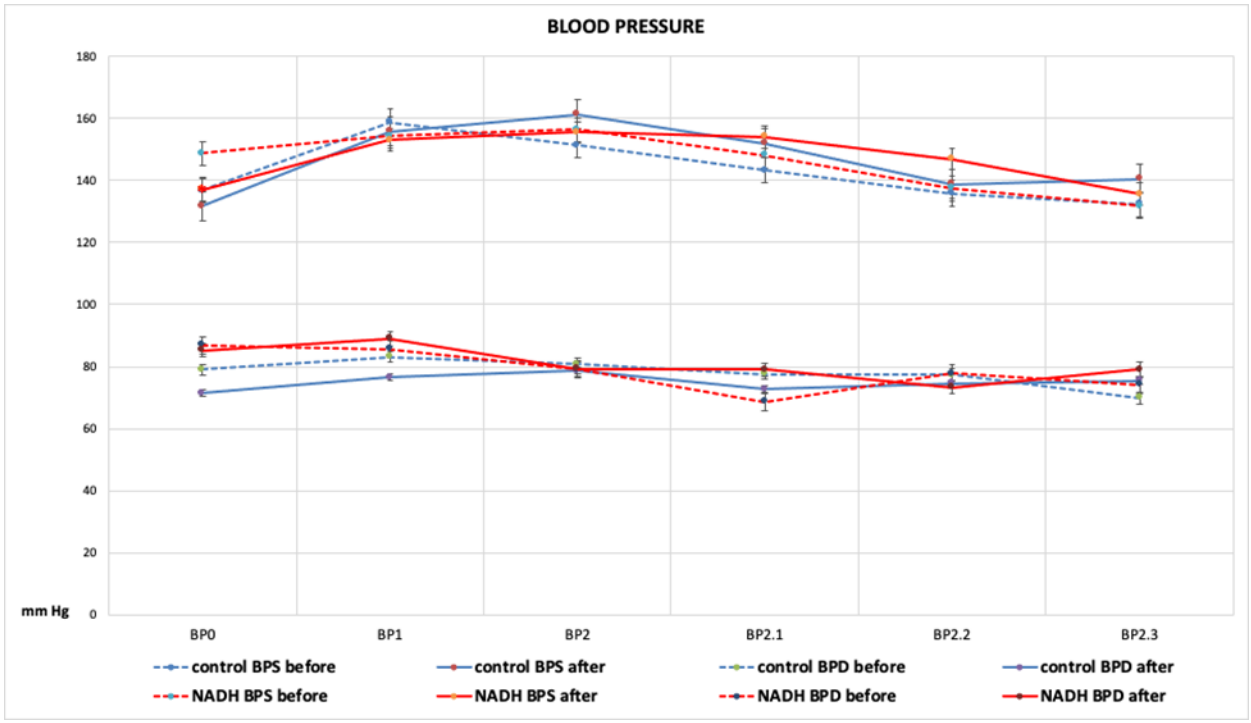
		NADH		control	
		before	After	Before	after
SBP0	mm Hg	148,6±3,4^	137,0±3,1*	136,9±3,5	131,6±2,9
SBP1	mm Hg	154,3±2,9	152,9±2,4	158,8±2,8	155,8±2,9
SBP2	mm Hg	156,3±3,0	155,4±3,1	151,3±3,3	161,3±3,4
SBP2.1	mm Hg	148,0±2,9	154,0±3,1	143,3±3,2	151,8±2,6
SBP2.2	mm Hg	137,4±2,6	146,9±2,5	135,8±2,4	138,8±2,5
SBP2.3	mm Hg	131,8±2,8	135,5±2,6	132,3±2,6	140,5±2,8
DBP0	mm Hg	86,9±1,6	85,3±1,1	79,0±2,6	71,5±2,5
DBP1	mm Hg	85,6±1,9	89,0±1,6	83,1±1,6	76,5±1,8
DBP2	mm Hg	79,1±1,4	79,3±1,3	80,7±1,6	78,6±1,5
DBP2.1	mm Hg	68,6±1,9	79,0±1,6	77,6±1,5	72,7±1,8
DBP2.2	mm Hg	77,8±1,1	73,4±1,5	77,4±1,6	74,5±1,9

DBP2.3	mm Hg	74,1±1,3	79,1±1,4	69,9±1,7	75,5±1,6

Note, here and further: SBP - systolic blood pressure, DBP - diastolic blood pressure, SBP0, DBP0 - before the PWC170 test, SBP1, DBP1 - after the first load, SBP2, DBP2 - after the second load, SBP2.1, DBP2.1 - 1 minute after the second load, SBP2.2, DBP2.2 - 2 minutes after the second load, SBP2.3, DBP2.3 - 3 minutes after the second load.

Figure 5

BP dynamics during testing and recovery after the PWC170 test



NADH intake resulted in a noteworthy 7.8% reduction in systolic blood pressure (SBP0) after three weeks.

Both groups displayed a hypertensive response to exercise, which normalized after NADH intake.

Interpretation: NADH exhibits potential antihypertensive effects, hinting at stress reduction benefits.

Discussion:

The analysis of the study results indicates that before the intervention, the control group demonstrated slightly higher tolerance to physical exertion (PWC170) than the main group, while the main group exhibited lower average VO2 max compared to the control group. However, after three weeks, the main group showed significant improvements. PWC170 increased by 25.6%, VO2 max increased by 23.9%, and VO2 max/b.w. increased by 24.6%. These results were statistically significant compared to both the control group and the pre-intervention values. NADH intake resulted in a noteworthy 7.8% reduction in systolic blood pressure (SBP0) after three weeks. NADH exhibits potential antihypertensive effects, hinting at stress reduction benefits.

The findings suggest that NADH supplementation positively influences the level of physical performance and endurance, even in individuals facing stressors and lacking regular physical training. The observed improvements in aerobic capacity and cardiovascular health highlight the potential benefits of NADH supplementation in enhancing overall physical well-being.

Conclusion:

1. Taking NADH twice a day for 3 weeks at a dose of 20 mg reliably increases the level of physical performance and tolerance to physical exertion (endurance).
2. NADH has a positive effect on a person's aerobic capacity even with long-term exposure to stressful factors and the absence of physical training: the use of 40 mg of the drug daily for 3 weeks by volunteers (non-athlete students during the period of intensive training) led to an increase in the VO2 max level by 25.6% and by 23.9% of the level of maximum oxygen consumption per 1 kg of body weight.
3. Taking NADH has a positive effect on the state of central hemodynamics and contributes to the normalization of blood pressure in young people with signs of arterial hypertension.

4. The use of NADH for 3 weeks at a daily dose of 40 mg led to an increase in the functional reserves of the cardiovascular system in people who do not engage in physical training.

Clinical Implications:

The observed improvements in blood pressure and heart rate parameters suggest that NADH supplementation could be considered in individuals facing stress-related cardiovascular challenges, such as arterial hypertension. Additionally, the positive impact on heart rate recovery may have implications for improving overall cardiovascular fitness.

Future Research Directions:

Future research should delve into the mechanisms underlying the observed improvements and explore the sustained effects of NADH supplementation over longer periods. Additionally, investigating the supplement's impact on diverse demographic groups and its potential application in clinical settings could provide valuable insights. This study provides valuable insights, future research should delve deeper into the specific mechanisms through which NADH influences blood pressure regulation and heart rate dynamics. Long-term studies assessing the sustained effects of NADH on cardiovascular parameters would further enhance our understanding of its potential benefits.