

The effect of intermittent hypoxia training on hematological parameters in sprague dawley rats: A randomized control trial

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Abstract

Background: Intermittent hypoxia training has been proposed as a potent facilitator of hematological adaptability, especially with respect to red blood cell proliferation and hemoglobin concentration. However, the comprehensive physiological implications of intermittent hypoxia training, as compared to normoxia training and intermittent hypoxia exposure, remain incompletely understood.

Methods: Ninety Sprague Dawley rats were randomly allocated into three experimental groups: intermittent hypoxia training, normoxia training, and intermittent hypoxia exposure, each consisting of 30 rats further stratified by gender. Hematological parameters, including hemoglobin level, red blood cell count, and hematocrit value, were evaluated at 24-hour intervals post the culmination of each training week for a span of 12 weeks. The study employed repeated measures analysis of variance to compare variations in these metrics across the experimental groups.

Results: Longitudinal assessment revealed a consistent uptrend in hemoglobin level, red blood cell count, and hematocrit value across all groups. However, the Sprague Dawley rats of intermittent hypoxia training group exhibited the most pronounced elevation in these parameters. A statistically significant elevation was observed in the intermittent hypoxia training group relative to both the intermittent hypoxia exposure and normoxia training groups starting from the seventh and eighth weeks, respectively.

Conclusion: Our findings confirmed the superior facilitative impact of intermittent hypoxia training on hematological parameters related to hemoglobin level, red blood cell count, and hematocrit value. These results contribute significantly to the extant body of knowledge concerning the intricate adaptive physiological mechanisms orchestrated under conditions of intermittent hypoxia and aerobic exercise. Furthermore, the data generated from this investigation serve as a robust foundational platform for future scholarly endeavors that aim to leverage these identified mechanisms for potential therapeutic applications.

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Introduction

The concept of altitude or hypoxic training is a common practice for improving aerobic capacity and endurance performance [1]. Several strategies of altitude training, like “live high + train high”, “live high + train low” and “live low + train high” have been proposed [2-11]. They are based on adaptive changes of humans to chronic hypoxia [12]. Chronic exposure to altitude improves oxygen transport capacity by enhancing Erythropoietin (EPO) secretion [13], hemoglobin mass [14] and maximal oxygen uptake (VO_2 max) [11] thus promotes exercise performance [1]. However, not all athletes or teams have the resources to travel to high altitude environments on a regular basis. During the last years several strategies, such as the Intermittent Hypoxia Training (IHT), have been used to increase the athletes’ sea level performance [15-24]. IHT refers to the discontinuous use of normobaric or hypobaric hypoxia, in an attempt to reproduce some of these key features of altitude acclimatization, with the ultimate goal to improve sea-level athletic performance [25]. In this method, athletes live in normoxic conditions and train in hypoxic environment [15]. In the realm of altitude training, IHT emerges as a pivotal strategy, addressing the limitations inherent in traditional altitude training methods. Moreover, it stands as an instrumental technique to augment the athletic prowess of elite competitors. Within the intricate physiological tapestry of the human body, blood serves as a fundamental conduit, orchestrating the equilibrium and numeration of diverse cellular constituents within. The vitality and equilibrium of blood cells play an indispensable role in upholding the immune functionality [26], facilitating oxygen transference [27], and maintaining metabolic homeostasis [28]. Nevertheless, the existing body of research examining the ramifications of IHT on hematological parameters, especially in mammalian experimental studies, remains somewhat in its nascent stages. In light of this gap, the current investigation endeavors to delve into the repercussions of IHT on the hematological metrics of rodent subjects. By harnessing the rigor of randomized controlled trial and assessing hematological parameters encompassing Hemoglobin (HGB), Red Blood Cell (RBC), and Hematocrit (HCT) within Sprague Dawley (SD) rats, this study aims to elucidate the intricate biochemical and physiological mechanisms through which Intermittent Hypoxic Training (IHT) modulates hematological parameters, in comparison to Normoxia Training (NT) and Intermittent Hypoxia Exposure (IHE). The findings will hopefully illuminate the prospective utility of IHT, furnishing a robust academic foundation for ensuing dialogues centered on its potential to amplify athletic competence and other related domains.

Materials and methods

Experimental subjects

For the purpose of this study, we recruited a cohort of 90 SD rats, each approximately two months of age. At the onset of the study, these specimens displayed an average body mass of 138.27 ± 5.839 g. Throughout a preliminary two-week acclimatization phase, stringent controls were imposed upon the environmental parameters within the designated housing facility. Ambient temperatures were diligently regulated at 23 ± 3 °C, while ensuring that the relative humidity hovered around $50 \pm 5\%$ consistently. The photoperiod was meticulously set to mirror a 12-hour light/12-hour dark cycle. Prioritizing the holistic welfare of the SD rats, the housing chamber was equipped with efficient ventilation systems. To further cater to their cognitive needs and avert potential behavioral aberrations, an

assortment of toys and stimuli was judiciously placed within their habitat. Nutritionally balanced feed and untainted water were dispensed at regular intervals. The maintenance regime included expedited removal of residual food and fecal matter, fortifying the hygiene and sanitation of the facility. To monitor their health trajectory, the SD rats underwent routine health evaluations, with the deployment of both prophylactic and therapeutic interventions when deemed essential. Subsequent to the acclimatization span, there was a notable augmentation in the SD rats’ body mass, registering at 187.74 ± 9.69 g. Such meticulous preparatory and maintenance protocols underscore our commitment to upholding the credibility and methodological integrity of the study. All protocols of animal experiments complied with Animal Research: Reporting of In Vivo Experiments Guidelines [29]. This study was approved by the Ethics Committee of Shandong Institute of Petroleum and Chemical Technology (registered number: KY-2023-033).

Experimental groups design

Utilizing a randomized number table method, the 90 SD rats were arbitrarily divided into three distinct groups, each consisting of 30 individuals, further stratified by gender with 15 males and 15 females in each. We employed a hypoxia device to create an appropriate hypoxic environment and utilized an oxygen concentration meter for accurate oxygen content measurements.

IHT group

The preliminary week was dedicated to acclimatization, during which SD rats were introduced to a hypoxic milieu characterized by an oxygen volume fraction of 15%. Over subsequent weeks, a systematic decrement in this fraction was instituted, culminating in a reduction from the initial 15% to a final concentration of 10%. Training paradigms consisted of rigorous 15-minute aerobic sessions under hypoxic constraints, interspersed with five-minute recuperative intervals, aggregating to a daily total of 1.5 hours. This regimen was consistently maintained over a span of 12 weeks, demarcated by five active days followed by a rest phase of two days.

NT group

SD rats in this assembly were domiciled under normobaric parameters. Training paradigms consisted of rigorous 15-minute aerobic sessions, interspersed with five-minute recuperative intervals, aggregating to a daily total of 1.5 hours. This regimen was consistently maintained over a span of 12 weeks, demarcated by five active days followed by a rest phase of two days.

IHE group

The preliminary week was dedicated to acclimatization, during which SD rats were introduced to a hypoxic milieu characterized by an oxygen volume fraction of 15%. Over subsequent weeks, a systematic decrement in this fraction was instituted, culminating in a reduction from the initial 15% to a final concentration of 10%. The daily engagement involved 15 minutes of exposure to the hypoxic conditions, interspaced by five-minute intervals, cumulatively accounting for 1.5 hours. This regimen was consistently maintained over a span of 12 weeks, demarcated by five active days followed by a rest phase of two days.

Hematological evaluation

Prior to the initiation of the experiment and at 24-hour in-

tervals post the culmination of each training week, blood specimens were meticulously extracted from the jugular vein. These samples were then subjected to detailed hematological assessments using a sophisticated animal blood analyzer. The metrics under evaluation included HGB level, RBC Count, and HCT value.

Statistical analysis

Data analysis was conducted using SPSS version 27.0. Quantitative data were presented as mean \pm standard deviation. Repeated measures Analysis of Variance (ANOVA) was utilized to compare the variations in HGB level, RBC Count, and HCT value across different groups over the duration of the experiment. The level of significance was set at $P=0.05$.

Results

Influence of different experiments on HGB level in SD rats

Prior to the commencement of the experimental procedures, one-way ANOVA confirmed that there were no statistically significant variations in the baseline HGB level across the three experimental SD rat groups ($P>0.05$). As the longitudinal study advanced, a discernible uptrend in HGB level was observed in all groups, culminating in a stabilization phase post the 10-week mark. Remarkably, the IHT group manifested the most pronounced elevation in HGB level. Beginning from the seventh week, a statistically significant elevation was recorded in the IHT group when compared to the IHE group. This difference became significant compared to the NT group as well, commencing from the eighth week (Tables 1-4, Figure 1)

Influence of different experiments on RBC count in SD rats

Prior to the commencement of the experimental procedures, one-way ANOVA confirmed that there were no statistically significant variations in the baseline RBC count across the three experimental SD rat groups ($P>0.05$). As the longitudinal study advanced, a discernible uptrend in RBC count was observed in all groups, culminating in a stabilization phase post the seven-week mark. Remarkably, the IHT group manifested the most pronounced elevation in RBC count. Beginning from the fourth week, a statistically significant elevation was recorded in the IHT group when compared to the IHE group. This difference became significant compared to the NT group as well, commencing from the fifth week (Tables 5-8, Figure 2)

Influence of different experiments on HCT value in SD rats

Prior to the commencement of the experimental procedures, one-way ANOVA confirmed that there were no statistically significant variations in the baseline HCT value across the three experimental SD rat groups ($P>0.05$). As the longitudinal study advanced, a discernible uptrend in HCT value was observed in all groups, culminating in a stabilization phase post the 10-week mark for IHT group, seven-week mark for NI group and IHE group. Remarkably, the IHT group manifested the most pronounced elevation in HCT value. Beginning from the eighth week, a statistically significant elevation was recorded in the IHT group when compared to the IHE group. This difference became significant compared to the NT group as well, for the eighth, ninth, 11th, and 12th week (Tables 9-12, Figure 3)

Discussion

Following a comprehensive 12-week investigation, we conducted meticulous experimental assessments on SD rats that were subjected to three distinct experimental conditions. The

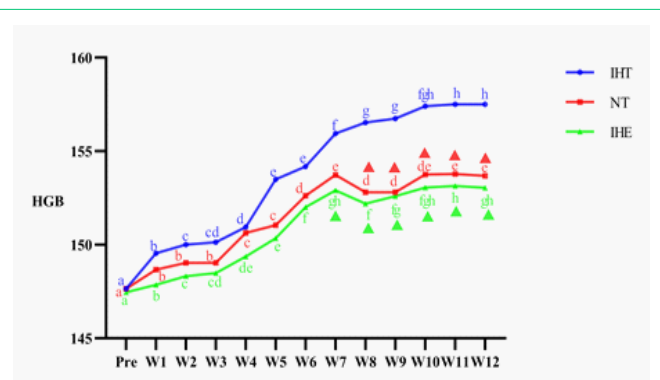


Figure 1: The comparison of HB changes in rats after 12-week training. **Note:** The letters “abcdehgh” indicate the time point differences using the letter marking method (intra-group comparison); the symbol “Δ” indicates significant differences compared to IHT group (inter-group comparison).

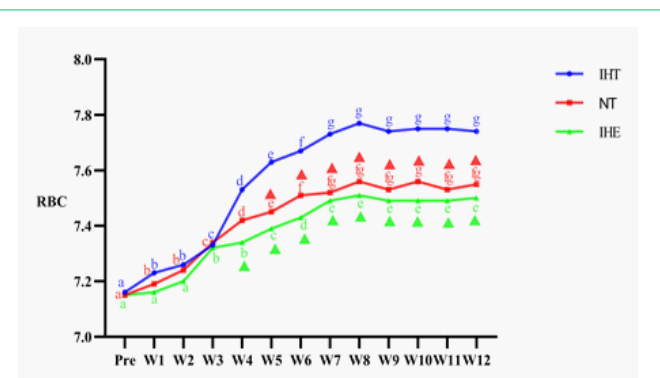


Figure 2: The comparison of RBC changes in rats after 12-week training. **Note:** The letters “abcdehgh” indicate the time point differences using the letter marking method (intra-group comparison); the symbol “Δ” indicates significant differences compared to IHT group (inter-group comparison).

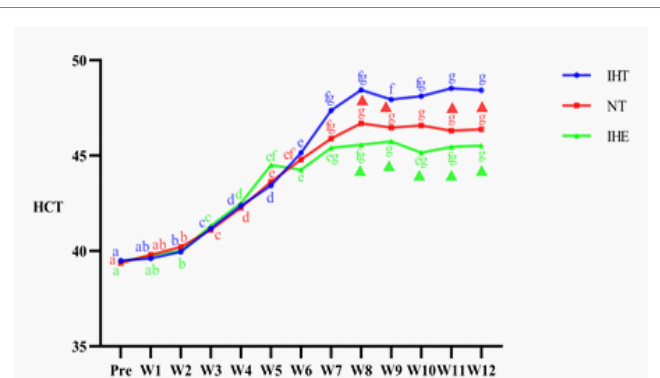


Figure 3: The comparison of HCT changes in rats after 12-week training. **Note:** The letters “abcdehgh” indicate the time point differences using the letter marking method (intra-group comparison); the symbol “Δ” indicates significant differences compared to IHT group (inter-group comparison).

objective was to scrutinize the intricate ramifications of intermittent hypoxia training on key hematological parameters, specifically HGB level, RBC Count, and HCT value.

In our initial observational data, we noted significant elevations in HGB level, RBC Count, and HCT value across all three experimental SD rats. This conspicuous alteration in physiological markers may be attributable to adaptive biological mechanisms activated under conditions of hypoxia or physical exertion. When encountering varied external environmental stressors, not only rats but also other mammals, including humans, initiate a cascade of physiological modifications to adapt to these

Table 1: Original data (HB)

Group	Pre	W1	W2	W3	W4	W5	W6	W7	W8	W9	W10	W11	W12
IHT	136.95	139.66	139.30	138.05	139.39	143.51	142.42	145.20	146.10	145.77	147.01	146.91	146.45
IHT	152.16	154.48	153.11	155.00	153.42	156.35	148.76	160.39	160.58	161.75	162.39	162.19	162.77
IHT	149.78	151.80	151.57	150.99	152.74	154.11	155.72	158.22	159.00	159.23	159.88	160.06	159.44
IHT	143.41	144.62	145.85	145.33	147.64	149.07	149.91	151.21	151.94	152.75	153.21	153.64	153.54
IHT	140.19	141.80	142.61	144.33	144.32	146.52	147.64	147.23	148.64	148.34	149.64	149.49	149.93
IHT	142.42	144.66	145.53	145.08	144.59	147.35	149.55	150.35	150.34	151.12	152.42	151.86	151.59
IHT	156.11	157.91	157.74	157.94	159.40	156.74	161.46	164.62	164.76	165.02	165.26	165.54	165.11
IHT	152.15	154.26	155.08	154.71	154.13	162.03	158.05	159.45	160.56	161.76	161.84	161.07	161.89
IHT	153.79	154.96	155.37	157.62	156.25	159.35	160.67	161.67	163.29	163.13	163.90	162.60	162.96
IHT	148.24	149.73	151.66	150.45	152.43	152.71	154.11	156.13	156.65	157.01	157.69	157.70	157.08
IHT	144.63	146.97	147.27	144.10	152.29	146.13	152.00	151.56	153.02	153.37	154.10	154.17	153.78
IHT	146.90	149.34	150.43	148.42	149.09	160.42	151.97	154.65	155.45	159.57	156.44	156.35	156.08
IHT	138.37	140.12	141.07	142.74	141.86	139.65	145.55	146.07	147.28	137.73	147.68	147.92	147.81
IHT	143.11	145.30	145.34	147.56	146.09	150.54	150.14	151.89	152.24	153.61	153.28	153.27	152.55
IHT	149.36	150.87	152.33	149.92	148.50	159.53	156.37	158.18	158.94	158.89	158.87	160.08	159.67
IHT	145.74	147.94	147.72	148.86	149.14	156.50	153.83	154.48	154.65	155.54	155.89	156.44	156.16
IHT	147.11	148.82	148.86	149.80	151.49	157.22	154.37	155.65	155.67	156.94	157.58	157.49	157.52
IHT	153.24	154.16	154.39	155.83	154.66	161.39	159.98	161.83	162.12	163.02	163.75	163.59	163.22
IHT	149.68	150.65	151.53	153.11	151.79	157.61	156.94	157.27	158.65	159.20	161.79	160.53	159.47
IHT	158.27	159.93	160.81	160.74	165.15	166.69	165.74	167.60	167.87	168.20	168.68	168.38	168.52
IHT	145.30	147.02	147.18	147.74	148.88	144.02	151.12	153.81	154.78	154.73	155.59	155.49	154.96
IHT	155.62	158.50	157.17	157.57	160.46	158.14	161.81	164.50	165.89	165.25	165.70	165.36	166.37
IHT	147.97	149.79	151.18	149.03	149.15	152.53	155.17	156.44	157.76	157.01	157.87	158.07	158.08
IHT	154.12	155.69	156.60	156.85	154.45	162.44	160.28	163.46	163.83	164.16	164.42	165.06	164.57
IHT	146.79	148.70	151.08	149.77	150.10	155.57	153.34	155.57	155.52	156.06	156.28	155.35	156.89
IHT	143.95	146.22	145.81	145.45	150.22	145.69	151.87	152.02	152.65	153.35	153.23	154.25	153.29
IHT	137.96	140.26	141.37	139.08	141.75	144.58	145.42	146.66	146.48	146.45	147.16	147.28	147.77
IHT	147.39	149.31	149.33	152.41	148.02	150.15	156.26	155.96	155.60	156.89	156.96	157.05	157.50
IHT	147.46	150.05	149.33	149.78	154.30	153.15	155.67	156.51	155.95	156.70	156.29	157.05	157.02
IHT	150.98	152.73	153.51	155.55	156.72	155.11	159.29	159.65	159.69	159.79	160.50	161.19	160.15
NT	137.41	139.22	138.66	137.41	139.56	141.41	140.82	143.10	142.52	142.52	158.65	143.33	142.87
NT	152.62	154.04	152.47	154.36	153.59	154.25	157.16	158.29	156.84	156.84	156.14	158.45	159.19
NT	150.24	151.36	150.93	150.35	152.91	152.01	154.12	156.12	155.26	155.26	149.63	156.32	155.86
NT	143.87	144.18	145.21	144.69	147.81	146.97	148.31	149.11	148.36	148.36	145.85	150.06	149.96
NT	140.15	140.86	145.47	143.19	143.99	143.92	146.04	145.13	144.85	144.85	148.63	145.70	146.14
NT	142.38	143.72	144.39	143.94	144.26	144.75	147.95	148.25	146.55	146.55	161.47	148.07	147.80
NT	156.07	156.97	156.60	156.80	159.07	154.14	159.86	162.52	160.97	160.97	158.05	161.75	161.32
NT	152.11	153.32	153.94	153.57	153.80	159.43	156.45	157.35	156.77	156.77	159.96	157.28	158.10
NT	153.60	153.87	154.08	156.33	155.77	156.60	158.92	159.42	159.35	159.35	153.75	158.66	159.02
NT	148.05	148.64	150.37	149.16	151.95	149.96	152.36	153.88	152.71	152.71	150.16	153.76	153.14
NT	144.44	146.88	145.98	142.81	151.81	143.38	150.25	149.31	149.08	149.08	152.55	150.23	149.84
NT	146.76	148.30	149.19	147.18	148.66	157.72	150.27	152.45	151.56	151.56	143.79	152.46	152.19
NT	138.23	139.08	139.83	141.50	141.43	136.95	143.85	143.87	143.39	143.39	149.39	144.03	143.92
NT	143.47	144.76	144.44	146.66	146.00	148.18	148.44	149.69	148.35	148.35	154.98	149.38	148.66

NT	149.72	150.33	151.43	149.02	148.41	157.17	154.67	155.98	155.05	155.05	152.00	156.19	155.78
NT	146.31	147.61	147.19	148.33	149.42	154.67	152.29	152.44	150.92	150.92	153.69	152.55	152.27
NT	147.68	148.49	148.33	149.27	151.77	155.23	152.67	153.45	151.78	151.78	159.86	153.60	153.63
NT	153.81	153.83	153.86	155.30	154.94	159.40	158.28	159.63	158.23	158.23	155.90	159.70	159.33
NT	149.75	149.82	150.50	152.08	151.57	155.12	155.24	155.07	154.76	154.76	164.84	156.64	155.58
NT	158.39	159.15	159.83	159.76	164.98	164.25	164.09	165.45	164.03	164.03	151.75	164.54	164.68
NT	145.42	146.24	146.20	146.92	148.87	141.74	149.63	151.66	150.94	150.94	161.86	151.65	151.12
NT	155.74	157.72	156.19	156.75	160.45	155.86	159.82	162.35	162.05	162.05	153.83	161.52	162.53
NT	147.39	148.31	149.50	147.35	148.28	149.89	152.82	154.09	153.72	153.72	160.38	154.03	154.04
NT	153.54	154.21	154.92	155.17	153.58	159.80	157.93	161.11	159.79	159.79	152.74	161.02	160.53
NT	146.21	147.22	149.40	148.09	149.23	152.93	150.99	153.22	151.98	151.98	149.69	151.81	153.35
NT	143.37	144.74	144.13	143.77	149.35	143.05	149.52	149.67	149.11	149.11	143.83	150.71	149.75
NT	137.59	138.99	139.90	137.61	140.88	141.94	143.07	144.31	143.15	143.15	153.63	143.95	144.44
NT	147.02	148.04	147.86	150.94	147.15	147.51	153.41	153.61	152.27	152.27	152.96	153.72	154.17
NT	146.88	148.57	147.65	148.10	153.22	150.30	152.82	154.16	152.62	152.62	157.17	153.72	153.69
NT	150.90	151.75	152.33	154.37	156.14	152.76	156.44	157.30	156.96	156.96	145.41	158.46	157.42
IHE	137.03	138.24	137.88	136.63	137.97	140.52	140.01	142.29	141.77	141.40	142.64	142.54	142.08
IHE	152.24	153.06	151.69	153.58	152.00	153.36	156.35	157.48	156.09	157.22	157.86	157.66	158.40
IHE	149.86	150.38	150.15	149.57	151.32	151.12	153.31	155.31	154.51	154.70	155.35	155.53	155.07
IHE	143.49	143.20	144.43	143.91	146.22	146.08	147.50	148.30	147.61	148.38	148.84	149.27	149.17
IHE	139.77	139.88	140.69	142.41	142.40	143.03	145.23	144.32	144.31	143.97	145.27	145.12	145.56
IHE	142.00	142.74	143.61	143.16	142.67	143.86	147.14	147.44	146.01	146.75	148.05	147.49	147.22
IHE	155.69	155.99	155.82	156.02	157.48	153.25	159.05	161.71	160.43	160.65	160.89	161.17	160.74
IHE	151.73	152.34	153.16	152.79	152.21	158.54	155.64	156.54	156.23	157.39	157.47	156.70	157.52
IHE	153.22	152.89	153.30	155.55	154.18	155.71	158.11	158.61	158.81	158.61	159.38	158.08	158.44
IHE	147.67	147.66	149.59	148.38	150.36	149.07	151.55	153.07	152.17	152.49	153.17	153.18	152.56
IHE	144.06	144.90	145.20	143.03	150.22	142.49	150.44	147.50	148.54	149.85	149.58	149.65	149.26
IHE	146.33	147.27	148.36	146.35	147.02	156.78	149.41	151.59	150.97	151.05	151.92	151.83	151.56
IHE	137.80	138.05	139.00	140.67	139.79	136.01	142.99	143.01	142.80	143.21	143.16	143.40	143.29
IHE	143.04	143.73	143.61	145.83	144.36	147.24	147.58	148.83	147.76	149.09	148.76	148.75	148.03
IHE	149.29	149.30	150.60	148.19	146.77	156.23	153.81	155.12	154.46	154.37	154.35	155.56	155.15
IHE	145.88	146.58	146.36	147.50	147.78	153.57	151.27	151.42	150.17	151.02	151.37	151.92	151.64
IHE	147.04	147.25	147.29	148.23	150.13	154.29	151.81	152.59	151.19	152.42	153.06	152.97	153.00
IHE	153.17	152.59	152.82	154.26	153.30	158.46	157.42	158.77	157.64	158.50	159.23	159.07	158.70
IHE	149.61	149.08	149.96	151.54	150.43	154.68	154.38	154.21	154.17	154.68	155.27	156.01	154.95
IHE	158.25	158.41	159.29	159.22	163.84	163.81	163.23	164.59	163.44	163.73	164.21	163.91	164.05
IHE	145.28	145.50	145.66	146.22	147.57	141.14	148.61	150.80	150.35	150.26	151.12	151.02	150.49
IHE	155.60	156.98	155.65	156.05	159.15	155.26	159.30	161.49	161.46	160.78	161.23	160.89	161.90
IHE	147.95	148.27	149.66	147.67	148.00	149.81	152.82	153.43	153.33	152.54	153.40	153.60	153.61
IHE	154.10	154.17	155.08	155.49	153.30	159.72	157.93	160.45	159.40	159.69	159.95	160.59	160.10
IHE	146.77	147.18	149.56	148.25	148.79	152.69	150.83	152.56	151.59	152.09	152.31	151.38	152.92
IHE	143.93	144.70	144.29	143.93	148.91	142.81	149.36	149.01	148.72	149.38	149.26	150.28	149.32
IHE	137.94	138.74	139.85	137.56	140.44	141.70	142.91	143.65	142.55	142.48	143.19	143.31	143.80
IHE	147.37	147.79	147.81	150.89	146.71	147.27	153.25	152.95	151.67	152.92	152.99	153.08	153.53
IHE	147.13	148.22	147.50	147.95	152.68	149.96	152.56	153.40	151.92	152.63	152.22	152.98	152.95
IHE	150.58	150.83	151.61	153.65	155.03	151.92	156.18	156.54	155.66	155.72	156.43	157.12	156.08

Table 2: Descriptive statistics (HB)

	Group	Mean	Standard deviation	Sample size
Pre	IHT	147.64	5.484	30
	NT	147.64	5.510	30
	IHE	147.46	5.494	30
W1	IHT	149.54	5.377	30
	NT	148.67	5.384	30
	IHE	147.86	5.388	30
W2	IHT	150.00	5.272	30
	NT	149.03	5.130	30
	IHE	148.32	5.275	30
W3	IHT	150.13	5.673	30
	NT	149.03	5.704	30
	IHE	148.48	5.650	30
W4	IHT	150.95	5.683	30
	NT	150.63	5.707	30
	IHE	149.37	5.716	30
W5	IHT	153.49	6.692	30
	NT	151.04	6.737	30
	IHE	150.35	6.739	30
W6	IHT	154.18	5.459	30
	NT	152.62	5.384	30
	IHE	152.00	5.383	30
W7	IHT	155.94	5.739	30
	NT	153.73	5.738	30
	IHE	152.90	5.761	30
W8	IHT	156.53	5.718	30
	NT	152.80	5.669	30
	IHE	152.19	5.668	30
W9	IHT	156.74	6.530	30
	NT	152.80	5.669	30
	IHE	152.60	5.652	30
W10	IHT	157.51	5.681	30
	NT	153.75	5.463	30
	IHE	153.06	5.588	30
W11	IHT	157.51	5.591	30
	NT	153.78	5.548	30
	IHE	153.14	5.540	30
W12	IHT	157.40	5.641	30
	NT	153.68	5.606	30
	IHE	153.04	5.603	30

Table 3: Paired comparison of time (HB)

Group	Time (a)	Time (b)	Mean difference (a-b)	P value	95% CI of mean difference	
					Low level	Upper level
IHT	Pre	W1	-1.90	0.000	-2.09	-1.72
		W2	-2.37	0.000	-2.68	-2.05
		W3	-2.49	0.000	-2.95	-2.03
		W4	-3.31	0.000	-4.05	-2.57
		W5	-5.86	0.000	-7.09	-4.62
		W6	-6.54	0.000	-7.05	-6.04
		W7	-8.30	0.000	-8.53	-8.08
		W8	-8.89	0.000	-9.09	-8.69
		W9	-9.11	0.000	-9.56	-8.66
		W10	-9.87	0.000	-11.41	-8.33
		W11	-9.88	0.000	-10.08	-9.67
		W12	-9.77	0.000	-9.96	-9.58
	W1	Pre	1.90	0.000	1.72	2.09
		W2	-0.46	0.012	-0.82	-0.10
		W3	-0.59	0.036	-1.13	-0.04
		W4	-1.41	0.000	-2.11	-0.70
		W5	-3.95	0.000	-5.22	-2.68
		W6	-4.64	0.000	-5.19	-4.08
		W7	-6.40	0.000	-6.69	-6.11
		W8	-6.99	0.000	-7.26	-6.71
		W9	-7.20	0.000	-7.68	-6.73
		W10	-7.97	0.000	-9.50	-6.43
		W11	-7.97	0.000	-8.27	-7.67
		W12	-7.86	0.000	-8.12	-7.61
	W2	Pre	2.37	0.000	2.05	2.68
		W1	0.46	0.012	0.10	0.82
		W3	-0.12	0.676	-0.70	0.46
		W4	-0.94	0.021	-1.74	-0.14
		W5	-3.49	0.000	-4.68	-2.30
		W6	-4.18	0.000	-4.73	-3.62
		W7	-5.94	0.000	-6.35	-5.53
		W8	-6.53	0.000	-6.91	-6.15
		W9	-6.74	0.000	-7.30	-6.18
		W10	-7.51	0.000	-9.06	-5.95
		W11	-7.51	0.000	-7.93	-7.09
		W12	-7.40	0.000	-7.78	-7.03
	W3	Pre	2.49	0.000	2.03	2.95
		W1	0.59	0.036	0.04	1.13
		W2	0.12	0.676	-0.46	0.70
		W4	-0.82	0.076	-1.73	0.09
		W5	-3.37	0.000	-4.69	-2.04

		W6	-4.05	0.000	-4.67	-3.44
		W7	-5.81	0.000	-6.31	-5.32
		W8	-6.40	0.000	-6.91	-5.89
		W9	-6.62	0.000	-7.29	-5.95
		W10	-7.38	0.000	-8.99	-5.78
		W11	-7.39	0.000	-7.89	-6.89
		W12	-7.28	0.000	-7.76	-6.80
	W4	Pre	3.31	0.000	2.57	4.05
		W1	1.41	0.000	0.70	2.11
		W2	0.94	0.021	0.14	1.74
		W3	0.82	0.076	-0.09	1.73
		W5	-2.55	0.002	-4.17	-0.93
		W6	-3.23	0.000	-4.00	-2.46
		W7	-4.99	0.000	-5.78	-4.21
		W8	-5.58	0.000	-6.35	-4.82
		W9	-5.80	0.000	-6.67	-4.93
		W10	-6.56	0.000	-8.33	-4.79
		W11	-6.57	0.000	-7.34	-5.80
		W12	-6.46	0.000	-7.24	-5.67
	W5	Pre	5.86	0.000	4.62	7.09
		W1	3.95	0.000	2.68	5.22
		W2	3.49	0.000	2.30	4.68
		W3	3.37	0.000	2.04	4.69
		W4	2.55	0.002	0.93	4.17
		W6	-0.69	0.313	-2.03	0.66
		W7	-2.45	0.000	-3.68	-1.22
		W8	-3.04	0.000	-4.31	-1.76
		W9	-3.25	0.000	-4.48	-2.03
		W10	-4.02	0.000	-6.04	-1.99
		W11	-4.02	0.000	-5.27	-2.77
		W12	-3.91	0.000	-5.13	-2.70
	W6	Pre	6.54	0.000	6.04	7.05
		W1	4.64	0.000	4.08	5.19
		W2	4.18	0.000	3.62	4.73
		W3	4.05	0.000	3.44	4.67
		W4	3.23	0.000	2.46	4.00
		W5	0.69	0.313	-0.66	2.03
		W7	-1.76	0.000	-2.31	-1.21
		W8	-2.35	0.000	-2.89	-1.81
		W9	-2.56	0.000	-3.26	-1.87
		W10	-3.33	0.000	-4.94	-1.72
		W11	-3.33	0.000	-3.86	-2.81
		W12	-3.22	0.000	-3.76	-2.69
	W7	Pre	8.30	0.000	8.08	8.53
		W1	6.40	0.000	6.11	6.69
		W2	5.94	0.000	5.53	6.35
		W3	5.81	0.000	5.32	6.31

		W4	4.99	0.000	4.21	5.78
		W5	2.45	0.000	1.22	3.68
		W6	1.76	0.000	1.21	2.31
		W8	-0.59	0.000	-0.80	-0.38
		W9	-0.80	0.001	-1.25	-0.36
		W10	-1.57	0.052	-3.16	0.02
		W11	-1.57	0.000	-1.82	-1.33
		W12	-1.46	0.000	-1.68	-1.25
	W8	Pre	8.89	0.000	8.69	9.09
		W1	6.99	0.000	6.71	7.26
		W2	6.53	0.000	6.15	6.91
		W3	6.40	0.000	5.89	6.91
		W4	5.58	0.000	4.82	6.35
		W5	3.04	0.000	1.76	4.31
		W6	2.35	0.000	1.81	2.89
		W7	0.59	0.000	0.38	0.80
		W9	-0.22	0.341	-0.66	0.23
		W10	-0.98	0.222	-2.56	0.60
		W11	-0.98	0.000	-1.22	-0.75
		W12	-0.88	0.000	-1.09	-0.66
	W9	Pre	9.11	0.000	8.66	9.56
		W1	7.20	0.000	6.73	7.68
		W2	6.74	0.000	6.18	7.30
		W3	6.62	0.000	5.95	7.29
		W4	5.80	0.000	4.93	6.67
		W5	3.25	0.000	2.03	4.48
		W6	2.56	0.000	1.87	3.26
		W7	0.80	0.001	0.36	1.25
		W8	0.22	0.341	-0.23	0.66
		W10	-0.77	0.353	-2.39	0.86
		W11	-0.77	0.001	-1.22	-0.32
		W12	-0.66	0.004	-1.11	-0.21
	W10	Pre	9.87	0.000	8.33	11.41
		W1	7.97	0.000	6.43	9.50
		W2	7.51	0.000	5.95	9.06
		W3	7.38	0.000	5.78	8.99
		W4	6.56	0.000	4.79	8.33
		W5	4.02	0.000	1.99	6.04
		W6	3.33	0.000	1.72	4.94
		W7	1.57	0.052	-0.02	3.16
		W8	0.98	0.222	-0.60	2.56
		W9	0.77	0.353	-0.86	2.39
		W11	0.00	0.996	-1.57	1.56
		W12	0.11	0.894	-1.46	1.68
	W11	Pre	9.88	0.000	9.67	10.08
		W1	7.97	0.000	7.67	8.27
		W2	7.51	0.000	7.09	7.93

		W3	7.39	0.000	6.89	7.89
		W4	6.57	0.000	5.80	7.34
		W5	4.02	0.000	2.77	5.27
		W6	3.33	0.000	2.81	3.86
		W7	1.57	0.000	1.33	1.82
		W8	0.98	0.000	0.75	1.22
		W9	0.77	0.001	0.32	1.22
		W10	0.00	0.996	-1.56	1.57
		W12	0.11	0.331	-0.11	0.33
	W12	Pre	9.77	0.000	9.58	9.96
		W1	7.86	0.000	7.61	8.12
		W2	7.40	0.000	7.03	7.78
		W3	7.28	0.000	6.80	7.76
		W4	6.46	0.000	5.67	7.24
		W5	3.91	0.000	2.70	5.13
		W6	3.22	0.000	2.69	3.76
		W7	1.46	0.000	1.25	1.68
		W8	0.88	0.000	0.66	1.09
		W9	0.66	0.004	0.21	1.11
		W10	-0.11	0.894	-1.68	1.46
		W11	-0.11	0.331	-0.33	0.11
NT	Pre	W1	-1.04	0.000	-1.22	-0.85
		W2	-1.39	0.000	-1.71	-1.07
		W3	-1.39	0.000	-1.85	-0.93
		W4	-2.99	0.000	-3.73	-2.26
		W5	-3.41	0.000	-4.64	-2.17
		W6	-4.98	0.000	-5.49	-4.47
		W7	-6.10	0.000	-6.32	-5.87
		W8	-5.16	0.000	-5.36	-4.96
		W9	-5.16	0.000	-5.61	-4.71
		W10	-6.11	0.000	-7.65	-4.57
		W11	-6.14	0.000	-6.34	-5.94
		W12	-6.04	0.000	-6.23	-5.85
	W1	Pre	1.04	0.000	0.85	1.22
		W2	-0.35	0.055	-0.71	0.01
		W3	-0.35	0.204	-0.90	0.20
		W4	-1.95	0.000	-2.66	-1.25
		W5	-2.37	0.000	-3.64	-1.10
		W6	-3.94	0.000	-4.50	-3.39
		W7	-5.06	0.000	-5.34	-4.77
		W8	-4.12	0.000	-4.40	-3.85
		W9	-4.12	0.000	-4.60	-3.65
		W10	-5.08	0.000	-6.61	-3.54
		W11	-5.10	0.000	-5.40	-4.80
		W12	-5.00	0.000	-5.26	-4.75
	W2	Pre	1.39	0.000	1.07	1.71
		W1	0.35	0.055	-0.01	0.71

		W3	0.00	1.000	-0.58	0.58
		W4	-1.60	0.000	-2.40	-0.80
		W5	-2.02	0.001	-3.21	-0.83
		W6	-3.59	0.000	-4.15	-3.03
		W7	-4.71	0.000	-5.12	-4.30
		W8	-3.77	0.000	-4.15	-3.39
		W9	-3.77	0.000	-4.34	-3.21
		W10	-4.73	0.000	-6.28	-3.17
		W11	-4.75	0.000	-5.17	-4.33
		W12	-4.65	0.000	-5.03	-4.28
	W3	Pre	1.39	0.000	0.93	1.85
		W1	0.35	0.204	-0.20	0.90
		W2	0.00	1.000	-0.58	0.58
		W4	-1.60	0.001	-2.51	-0.70
		W5	-2.02	0.003	-3.34	-0.69
		W6	-3.59	0.000	-4.20	-2.98
		W7	-4.71	0.000	-5.20	-4.21
		W8	-3.77	0.000	-4.28	-3.26
		W9	-3.77	0.000	-4.44	-3.10
		W10	-4.73	0.000	-6.33	-3.12
		W11	-4.75	0.000	-5.25	-4.25
		W12	-4.65	0.000	-5.13	-4.17
	W4	Pre	2.99	0.000	2.26	3.73
		W1	1.95	0.000	1.25	2.66
		W2	1.60	0.000	0.80	2.40
		W3	1.60	0.001	0.70	2.51
		W5	-0.42	0.612	-2.04	1.21
		W6	-1.99	0.000	-2.76	-1.22
		W7	-3.11	0.000	-3.89	-2.32
		W8	-2.17	0.000	-2.93	-1.41
		W9	-2.17	0.000	-3.04	-1.30
		W10	-3.12	0.001	-4.89	-1.36
		W11	-3.15	0.000	-3.92	-2.38
		W12	-3.05	0.000	-3.83	-2.27
	W5	Pre	3.41	0.000	2.17	4.64
		W1	2.37	0.000	1.10	3.64
		W2	2.02	0.001	0.83	3.21
		W3		0.003	0.69	3.34
		W4	0.42	0.612	-1.21	2.04
		W6	-1.57	0.023	-2.92	-0.23
		W7	-2.69	0.000	-3.92	-1.46
		W8	-1.75	0.007	-3.03	-0.48
		W9	-1.75	0.005	-2.98	-0.53
		W10	-2.71	0.009	-4.73	-0.69
		W11	-2.73	0.000	-3.98	-1.49
		W12	-2.63	0.000	-3.85	-1.42
	W6	Pre	4.98	0.000	4.47	5.49

		W1	3.94	0.000	3.39	4.50
		W2	3.59	0.000	3.03	4.15
		W3	3.59	0.000	2.98	4.20
		W4	1.99	0.000	1.22	2.76
		W5	1.57	0.023	0.23	2.92
		W7	-1.12	0.000	-1.67	-0.56
		W8	-0.18	0.507	-0.72	0.36
		W9	-0.18	0.607	-0.88	0.52
		W10	-1.14	0.164	-2.74	0.47
		W11	-1.16	0.000	-1.68	-0.64
		W12	-1.06	0.000	-1.60	-0.52
	W7	Pre	6.10	0.000	5.87	6.32
		W1	5.06	0.000	4.77	5.34
		W2	4.71	0.000	4.30	5.12
		W3	4.71	0.000	4.21	5.20
		W4	3.11	0.000	2.32	3.89
		W5	2.69	0.000	1.46	3.92
		W6	1.12	0.000	0.56	1.67
		W8	0.94	0.000	0.73	1.14
		W9	0.94	0.000	0.49	1.38
		W10	-0.02	0.982	-1.60	1.57
		W11	-0.04	0.727	-0.29	0.20
		W12	0.06	0.609	-0.16	0.27
	W8	Pre	5.16	0.000	4.96	5.36
		W1	4.12	0.000	3.85	4.40
		W2	3.77	0.000	3.39	4.15
		W3	3.77	0.000	3.26	4.28
		W4	2.17	0.000	1.41	2.93
		W5	1.75	0.007	0.48	3.03
		W6	0.18	0.507	-0.36	0.72
		W7	-0.94	0.000	-1.14	-0.73
		W9	0.00	1.000	-0.45	0.45
		W10	-0.95	0.234	-2.54	0.63
		W11	-0.98	0.000	-1.21	-0.74
		W12	-0.88	0.000	-1.09	-0.67
	W9	Pre	5.16	0.000	4.71	5.61
		W1	4.12	0.000	3.65	4.60
		W2	3.77	0.000	3.21	4.34
		W3	3.77	0.000	3.10	4.44
		W4	2.17	0.000	1.30	3.04
		W5	1.75	0.005	0.53	2.98
		W6	0.18	0.607	-0.52	0.88
		W7	-0.94	0.000	-1.38	-0.49
		W8	0.00	1.000	-0.45	0.45
		W10	-0.95	0.247	-2.58	0.67
		W11	-0.98	0.000	-1.43	-0.52
		W12	-0.88	0.000	-1.33	-0.43

		W10	Pre	6.11	0.000	4.57	7.65
			W1	5.08	0.000	3.54	6.61
			W2	4.73	0.000	3.17	6.28
			W3	4.73	0.000	3.12	6.33
			W4	3.12	0.001	1.36	4.89
			W5	2.71	0.009	0.69	4.73
			W6	1.14	0.164	-0.47	2.74
			W7	0.02	0.982	-1.57	1.60
			W8	0.95	0.234	-0.63	2.54
			W9	0.95	0.247	-0.67	2.58
			W11	-0.03	0.975	-1.59	1.54
			W12	0.07	0.926	-1.50	1.64
		W11	Pre	6.14	0.000	5.94	6.34
			W1	5.10	0.000	4.80	5.40
			W2	4.75	0.000	4.33	5.17
			W3	4.75	0.000	4.25	5.25
			W4	3.15	0.000	2.38	3.92
			W5	2.73	0.000	1.49	3.98
			W6	1.16	0.000	0.64	1.68
			W7	0.04	0.727	-0.20	0.29
			W8	0.98	0.000	0.74	1.21
			W9	0.98	0.000	0.52	1.43
			W10	0.03	0.975	-1.54	1.59
			W12	0.10	0.380	-0.12	0.32
		W12	Pre	6.04	0.000	5.85	6.23
			W1	5.00	0.000	4.75	5.26
			W2	4.65	0.000	4.28	5.03
			W3	4.65	0.000	4.17	5.13
			W4	3.05	0.000	2.27	3.83
			W5	2.63	0.000	1.42	3.85
			W6	1.06	0.000	0.52	1.60
			W7	-0.06	0.609	-0.27	0.16
			W8	0.88	0.000	0.67	1.09
			W9	0.88	0.000	0.43	1.33
			W10	-0.07	0.926	-1.64	1.50
			W11	-0.10	0.380	-0.32	0.12
IHE	Pre	W1	-0.40	0.000	-0.59	-0.22	
		W2	-0.86	0.000	-1.17	-0.54	
		W3	-1.02	0.000	-1.48	-0.57	
		W4	-1.91	0.000	-2.64	-1.17	
		W5	-2.89	0.000	-4.12	-1.65	
		W6	-4.54	0.000	-5.05	-4.03	
		W7	-5.44	0.000	-5.67	-5.21	
		W8	-4.73	0.000	-4.93	-4.53	
		W9	-5.14	0.000	-5.59	-4.69	
		W10	-5.60	0.000	-7.14	-4.06	

		W11	-5.68	0.000	-5.88	-5.47
		W12	-5.58	0.000	-5.76	-5.39
	W1	Pre	0.40	0.000	0.22	0.59
		W2	-0.45	0.014	-0.81	-0.09
		W3	-0.62	0.027	-1.17	-0.07
		W4	-1.50	0.000	-2.21	-0.80
		W5	-2.48	0.000	-3.75	-1.21
		W6	-4.14	0.000	-4.69	-3.58
		W7	-5.04	0.000	-5.32	-4.75
		W8	-4.33	0.000	-4.60	-4.05
		W9	-4.74	0.000	-5.21	-4.26
		W10	-5.20	0.000	-6.74	-3.67
		W11	-5.27	0.000	-5.57	-4.97
		W12	-5.17	0.000	-5.43	-4.92
	W2	Pre	0.86	0.000	0.54	1.17
		W1	0.45	0.014	0.09	0.81
		W3	-0.17	0.571	-0.75	0.42
		W4	-1.05	0.010	-1.85	-0.25
		W5	-2.03	0.001	-3.22	-0.84
		W6	-3.68	0.000	-4.24	-3.13
		W7	-4.58	0.000	-4.99	-4.17
		W8	-3.88	0.000	-4.26	-3.50
		W9	-4.28	0.000	-4.85	-3.72
		W10	-4.75	0.000	-6.30	-3.19
		W11	-4.82	0.000	-5.24	-4.40
		W12	-4.72	0.000	-5.10	-4.35
	W3	Pre	1.02	0.000	0.57	1.48
		W1	0.62	0.027	0.07	1.17
		W2	0.17	0.571	-0.42	0.75
		W4	-0.89	0.056	-1.79	0.02
		W5	-1.86	0.006	-3.19	-0.54
		W6	-3.52	0.000	-4.13	-2.90
		W7	-4.42	0.000	-4.91	-3.92
		W8	-3.71	0.000	-4.22	-3.20
		W9	-4.12	0.000	-4.79	-3.44
		W10	-4.58	0.000	-6.19	-2.97
		W11	-4.65	0.000	-5.16	-4.15
		W12	-4.55	0.000	-5.03	-4.08
	W4	Pre	1.91	0.000	1.17	2.64
		W1	1.50	0.000	0.80	2.21
		W2	1.05	0.010	0.25	1.85
		W3	0.89	0.056	-0.02	1.79
		W5	-0.98	0.233	-2.60	0.64
		W6	-2.63	0.000	-3.40	-1.86
		W7	-3.53	0.000	-4.32	-2.74
		W8	-2.82	0.000	-3.59	-2.06
		W9	-3.23	0.000	-4.10	-2.36

		W10	-3.70	0.000	-5.47	-1.93
		W11	-3.77	0.000	-4.54	-3.00
		W12	-3.67	0.000	-4.45	-2.89
	W5	Pre	2.89	0.000	1.65	4.12
		W1	2.48	0.000	1.21	3.75
		W2	2.03	0.001	0.84	3.22
		W3	1.86	0.006	0.54	3.19
		W4	0.98	0.233	-0.64	2.60
		W6	-1.65	0.017	-3.00	-0.31
		W7	-2.55	0.000	-3.79	-1.32
		W8	-1.85	0.005	-3.12	-0.57
		W9	-2.25	0.000	-3.48	-1.03
		W10	-2.72	0.009	-4.74	-0.70
		W11	-2.79	0.000	-4.04	-1.54
		W12	-2.69	0.000	-3.91	-1.48
	W6	Pre	4.54	0.000	4.03	5.05
		W1	4.14	0.000	3.58	4.69
		W2	3.68	0.000	3.13	4.24
		W3	3.52	0.000	2.90	4.13
		W4	2.63	0.000	1.86	3.40
		W5	1.65	0.017	0.31	3.00
		W7	-0.90	0.002	-1.45	-0.35
		W8	-0.19	0.482	-0.73	0.35
		W9	-0.60	0.091	-1.30	0.10
		W10	-1.07	0.191	-2.67	0.54
		W11	-1.14	0.000	-1.66	-0.62
		W12	-1.04	0.000	-1.58	-0.50
	W7	Pre	5.44	0.000	5.21	5.67
		W1	5.04	0.000	4.75	5.32
		W2	4.58	0.000	4.17	4.99
		W3	4.42	0.000	3.92	4.91
		W4	3.53	0.000	2.74	4.32
		W5	2.55	0.000	1.32	3.79
		W6	0.90	0.002	0.35	1.45
		W8	0.71	0.000	0.50	0.91
		W9	0.30	0.185	-0.15	0.75
		W10	-0.17	0.837	-1.75	1.42
		W11	-0.24	0.060	-0.48	0.01
		W12	-0.14	0.210	-0.35	0.08
	W8	Pre	4.73	0.000	4.53	4.93
		W1	4.33	0.000	4.05	4.60
		W2	3.88	0.000	3.50	4.26
		W3	3.71	0.000	3.20	4.22
		W4	2.82	0.000	2.06	3.59
		W5	1.85	0.005	0.57	3.12
		W6	0.19	0.482	-0.35	0.73
		W7	-0.71	0.000	-0.91	-0.50

		W9	-0.41	0.072	-0.85	0.04
		W10	-0.87	0.276	-2.46	0.71
		W11	-0.94	0.000	-1.18	-0.71
		W12	-0.85	0.000	-1.06	-0.63
	W9	Pre	5.14	0.000	4.69	5.59
		W1	4.74	0.000	4.26	5.21
		W2	4.28	0.000	3.72	4.85
		W3	4.12	0.000	3.44	4.79
		W4	3.23	0.000	2.36	4.10
		W5	2.25	0.000	1.03	3.48
		W6	0.60	0.091	-0.10	1.30
		W7	-0.30	0.185	-0.75	0.15
		W8	0.41	0.072	-0.04	0.85
		W10	-0.47	0.572	-2.09	1.16
		W11	-0.54	0.021	-0.99	-0.08
		W12	-0.44	0.056	-0.89	0.01
	W10	Pre	5.60	0.000	4.06	7.14
		W1	5.20	0.000	3.67	6.74
		W2	4.75	0.000	3.19	6.30
		W3	4.58	0.000	2.97	6.19
		W4	3.70	0.000	1.93	5.47
		W5	2.72	0.009	0.70	4.74
		W6	1.07	0.191	-0.54	2.67
		W7	0.17	0.837	-1.42	1.75
		W8	0.87	0.276	-0.71	2.46
		W9	0.47	0.572	-1.16	2.09
		W11	-0.07	0.928	-1.63	1.49
		W12	0.03	0.972	-1.54	1.60
	W11	Pre	5.68	0.000	5.47	5.88
		W1	5.27	0.000	4.97	5.57
		W2	4.82	0.000	4.40	5.24
		W3	4.65	0.000	4.15	5.16
		W4	3.77	0.000	3.00	4.54
		W5	2.79	0.000	1.54	4.04
		W6	1.14	0.000	0.62	1.66
		W7	0.24	0.060	-0.01	0.48
		W8	0.94	0.000	0.71	1.18
		W9	0.54	0.021	0.08	0.99
		W10	0.07	0.928	-1.49	1.63
		W12	0.10	0.380	-0.12	0.32
	W12	Pre	5.58	0.000	5.39	5.76
		W1	5.17	0.000	4.92	5.43
		W2	4.72	0.000	4.35	5.10
		W3	4.55	0.000	4.08	5.03
		W4	3.67	0.000	2.89	4.45
		W5	2.69	0.000	1.48	3.91
		W6	1.04	0.000	0.50	1.58

		W7	0.14	0.210	-0.08	0.35
		W8	0.85	0.000	0.63	1.06
		W9	0.44	0.056	-0.01	0.89
		W10	-0.03	0.972	-1.60	1.54
		W11	-0.10	0.380	-0.32	0.12

new circumstances [30,31]. These adaptive mechanisms serve to maintain metabolic stability and essential life functions under a range of conditions. Upon exposure to hypoxic environments or during episodes of physical activity, there is a stabilization and subsequent accumulation of intracellular Hypoxia Inducible Factors [32]. This triggers the activation of genes instrumental in oxygen homeostasis. Such activation facilitates the secretion of EPO from the kidneys [33], ensuring an adequate oxygen supply under challenging conditions. Concurrently, both hypoxic conditions and physical exertion induce the spleen to liberate its reservoir of stored RBCs [34]. This mechanism provides an immediate boost to the circulating RBC mass and, consequently, the blood's oxygen-carrying capacity. Additionally, sustained periods of hypoxia or physical exercise could potentially stimulate the bone marrow to expedite the production of RBCs [35,36].

Subsequent to our comprehensive data analysis, it was unequivocally observed that SD rats subjected to IHT exhibited a superior physiological response across all evaluated hematological parameters, with this divergence becoming notably pronounced during the mid-to-late phases of our 12-week experimental timeline. This compelling outcome compellingly indicates that the IHT regimen synergistically combines two critical physiological stimuli-hypoxia and physical exercise-to create an unparalleled physiological environment for rodent subjects. In a comparative assessment, it was revealed that SD rats undergoing IHT manifested a statistically significant elevation in HGB level, RBC Count, and HCT value relative to those undergoing either IHE or NT in isolation. Ultimately, as the experiment unfolded, the heightened physiological adaptability conferred by this confluence of stimuli became increasingly manifest, resulting in hematological parameters for the IHT group SD rats that were demonstrably superior to those of control groups.

Following an exhaustive longitudinal analysis of time-series data, it was discerned that the hematological parameters in all three experimental SD rats exhibited a trend towards stabilization between the seventh and 10th weeks of the study period. This salient observation strongly suggests that a physiological plateau in RBC proliferation and HB concentration is attained following a sustained period of hypoxic exposure or aerobic activity, marked by a decelerated rate of increment for these parameters.

This intriguing phenomenon can be ascribed to a confluence of multiple, interconnected physiological mechanisms. Firstly, it is evident that with the elapse of time, SD rats manifest adaptive responses to the imposed environmental conditions, whether it be hypoxia, normoxia training, or a synergistic combination thereof. It is well-documented that as biological organisms acclimate to external stimuli, there is a concomitant attenuation in the magnitude of their physiological responses. Secondly, longitudinal data suggest that the secretion of EPO may reach a state of equilibrium, consequently retarding the rate at which RBC and HB are generated.

Table 4: Paired comparison of groups (HB)

Time	Group (a)	Group (b)	Mean difference (a-b)	P value	95% CI of mean difference	
					Low level	Upper level
Pre	IHT	NT	0.00	0.999	-2.82	2.82
		IHE	0.18	0.901	-2.64	3.00
	NT	IHT	0.00	0.999	-2.82	2.82
		IHE	0.18	0.901	-2.64	3.00
	IHE	IHT	-0.18	0.901	-3.00	2.64
		NT	-0.18	0.901	-3.00	2.64
W1	IHT	NT	0.87	0.534	-1.90	3.63
		IHE	1.68	0.231	-1.09	4.44
	NT	IHT	-0.87	0.534	-3.63	1.90
		IHE	0.81	0.562	-1.95	3.57
	IHE	IHT	-1.68	0.231	-4.44	1.09
		NT	-0.81	0.562	-3.57	1.95
W2	IHT	NT	0.98	0.470	-1.70	3.66
		IHE	1.69	0.214	-0.99	4.37
	NT	IHT	-0.98	0.470	-3.66	1.70
		IHE	0.71	0.600	-1.97	3.39
	IHE	IHT	-1.69	0.214	-4.37	0.99
		NT	-0.71	0.600	-3.39	1.97
W3	IHT	NT	1.10	0.454	-1.81	4.01
		IHE	1.64	0.265	-1.27	4.56
	NT	IHT	-1.10	0.454	-4.01	1.81
		IHE	0.54	0.712	-2.37	3.46
	IHE	IHT	-1.64	0.265	-4.56	1.27
		NT	-0.54	0.712	-3.46	2.37
W4	IHT	NT	0.32	0.829	-2.61	3.25
		IHE	1.58	0.286	-1.35	4.51
	NT	IHT	-0.32	0.829	-3.25	2.61
		IHE	1.26	0.394	-1.67	4.19
	IHE	IHT	-1.58	0.286	-4.51	1.35
		NT	-1.26	0.394	-4.19	1.67
W5	IHT	NT	2.45	0.162	-1.00	5.90
		IHE	3.15	0.073	-0.30	6.60
	NT	IHT	-2.45	0.162	-5.90	1.00
		IHE	0.70	0.689	-2.75	4.15
	IHE	IHT	-3.15	0.073	-6.60	0.30
		NT	-0.70	0.689	-4.15	2.75
W6	IHT	NT	1.56	0.266	-1.21	4.34
		IHE	2.18	0.122	-0.60	4.96
	NT	IHT	-1.56	0.266	-4.34	1.21
		IHE	0.62	0.660	-2.16	3.39
	IHE	IHT	-2.18	0.122	-4.96	0.60
		NT	-0.62	0.660	-3.39	2.16
W7	IHT	NT	2.21	0.140	-0.74	5.16

		IHE	3.04	0.043	0.09	5.99
	NT	IHT	-2.21	0.140	-5.16	0.74
		IHE	0.83	0.576	-2.12	3.78
	IHE	IHT	-3.04	0.043	-5.99	-0.09
		NT	-0.83	0.576	-3.78	2.12
W8	IHT	NT	3.73	0.013	0.82	6.65
		IHE	4.34	0.004	1.42	7.26
	NT	IHT	-3.73	0.013	-6.65	-0.82
		IHE	0.61	0.681	-2.31	3.52
	IHE	IHT	-4.34	0.004	-7.26	-1.42
		NT	-0.61	0.681	-3.52	2.31
W9	IHT	NT	3.95	0.012	0.89	7.01
		IHE	4.15	0.009	1.09	7.21
	NT	IHT	-3.95	0.012	-7.01	-0.89
		IHE	0.20	0.898	-2.86	3.26
	IHE	IHT	-4.15	0.009	-7.21	-1.09
		NT	-0.20	0.898	-3.26	2.86
W10	IHT	NT	3.76	0.011	0.90	6.62
		IHE	4.45	0.003	1.58	7.31
	NT	IHT	-3.76	0.011	-6.62	-0.90
		IHE	0.69	0.635	-2.18	3.55
	IHE	IHT	-4.45	0.003	-7.31	-1.58
		NT	-0.69	0.635	-3.55	2.18
W11	IHT	NT	3.74	0.011	0.89	6.59
		IHE	4.38	0.003	1.53	7.23
	NT	IHT	-3.74	0.011	-6.59	-0.89
		IHE	0.64	0.656	-2.21	3.49
	IHE	IHT	-4.38	0.003	-7.23	-1.53
		NT	-0.64	0.656	-3.49	2.21
W12	IHT	NT	3.73	0.012	0.85	6.61
		IHE	4.37	0.003	1.49	7.25
	NT	IHT	-3.73	0.012	-6.61	-0.85
		IHE	0.64	0.660	-2.24	3.52
	IHE	IHT	-4.37	0.003	-7.25	-1.49
		NT	-0.64	0.660	-3.52	2.24

Table 5: Original data (RBC)

Group	Pre	W1	W2	W3	W4	W5	W6	W7	W8	W9	W10	W11	W12
IHT	6.84	6.91	6.78	6.97	7.22	7.22	7.36	7.41	7.43	7.31	7.41	7.41	7.60
IHT	7.35	7.39	7.42	7.48	7.64	7.81	7.87	7.91	7.92	8.09	8.06	7.94	7.95
IHT	7.68	7.72	7.67	7.86	8.05	8.12	8.19	8.24	8.31	8.18	8.13	8.36	8.31
IHT	6.95	7.01	7.01	6.97	7.27	7.39	7.44	7.51	7.61	7.57	7.54	7.47	7.35
IHT	7.13	7.19	7.35	7.09	7.49	7.49	7.64	7.75	7.68	7.78	7.77	7.75	7.78
IHT	6.74	6.79	6.93	6.92	7.05	7.17	7.32	7.27	7.32	7.25	7.18	7.29	7.33
IHT	7.51	7.51	7.49	7.84	7.89	7.96	7.98	8.21	8.09	7.98	8.12	8.11	8.07
IHT	6.98	7.08	7.03	7.00	7.33	7.52	7.52	7.52	7.44	7.63	7.55	7.40	7.46

IHT	7.25	7.31	7.41	7.42	7.71	7.76	7.84	7.82	7.68	7.76	7.76	7.83	7.69
IHT	7.04	7.08	7.08	7.21	7.39	7.48	7.55	7.66	7.63	7.46	7.80	7.61	7.55
IHT	7.14	7.15	7.35	7.07	7.49	7.57	7.65	7.67	7.75	7.64	7.67	7.67	7.72
IHT	7.61	7.75	7.56	7.74	7.98	8.03	8.13	8.11	8.20	8.12	8.20	8.34	8.18
IHT	7.10	7.11	7.29	7.22	7.51	7.61	7.59	7.76	7.71	7.68	7.79	7.72	7.61
IHT	6.86	6.93	6.98	7.13	7.24	7.45	7.40	7.41	7.50	7.31	7.47	7.42	7.39
IHT	7.38	7.48	7.50	7.66	7.80	7.85	7.83	7.93	7.74	7.74	7.71	7.81	7.59
IHT	7.06	7.17	7.28	7.27	7.39	7.54	7.57	7.65	7.54	7.40	7.32	7.48	7.33
IHT	7.18	7.29	7.30	7.34	7.48	7.66	7.73	7.77	8.06	7.77	7.96	7.89	7.91
IHT	6.91	6.99	6.97	7.08	7.24	7.38	7.46	7.36	8.07	8.12	8.12	8.09	8.16
IHT	7.29	7.37	7.41	7.21	7.63	7.73	7.79	7.74	7.67	7.63	7.54	7.54	7.48
IHT	6.96	7.05	7.10	7.31	7.36	7.45	7.50	7.52	7.70	7.66	7.79	7.61	7.87
IHT	7.44	7.42	7.40	7.59	7.83	7.87	7.96	8.00	8.03	7.89	8.05	7.86	8.11
IHT	7.05	7.07	7.05	7.29	7.52	7.50	7.55	7.56	7.53	7.77	7.57	7.68	7.54
IHT	7.23	7.47	7.20	7.53	7.53	7.78	7.60	7.86	7.93	7.92	8.00	7.83	7.94
IHT	6.78	6.87	6.78	7.14	7.19	7.29	7.31	7.38	7.56	7.43	7.41	7.35	7.20
IHT	7.57	7.66	7.61	7.78	7.94	8.04	8.06	8.07	7.88	8.26	8.03	8.06	8.26
IHT	7.23	7.24	7.43	7.27	7.59	7.72	7.69	7.82	7.98	7.73	7.70	7.69	7.80
IHT	7.02	7.09	7.16	7.21	7.37	7.40	7.47	7.64	7.52	7.63	7.69	7.76	7.67
IHT	7.30	7.32	7.55	7.46	7.61	7.80	7.80	7.84	7.89	7.99	7.84	7.82	7.62
IHT	6.89	6.95	7.09	7.23	7.25	7.39	7.32	7.50	7.51	7.50	7.48	7.49	7.48
IHT	7.47	7.51	7.68	7.71	7.86	7.91	7.99	7.97	8.25	7.98	7.95	8.09	8.11
NT	6.81	6.86	6.73	6.96	7.06	7.02	7.15	7.19	7.19	7.09	7.21	7.18	7.38
NT	7.32	7.34	7.37	7.47	7.48	7.61	7.66	7.69	7.68	7.87	7.86	7.71	7.73
NT	7.65	7.67	7.62	7.85	7.89	7.92	7.98	8.02	8.07	7.96	7.93	8.13	8.09
NT	6.92	6.96	6.96	6.96	7.11	7.19	7.23	7.29	7.37	7.35	7.34	7.24	7.13
NT	7.10	7.14	7.30	7.08	7.33	7.29	7.43	7.53	7.44	7.56	7.57	7.52	7.56
NT	6.71	6.74	6.88	6.91	6.89	6.97	7.11	7.05	7.08	7.03	6.98	7.06	7.11
NT	7.48	7.46	7.44	7.83	7.73	7.76	7.77	7.99	7.85	7.76	7.92	7.88	7.85
NT	7.58	7.64	7.68	7.76	7.90	7.94	7.88	7.72	8.04	7.81	8.05	8.11	8.1
NT	7.22	7.26	7.36	7.41	7.55	7.56	7.63	7.60	7.44	7.54	7.56	7.60	7.47
NT	7.01	7.03	7.03	7.20	7.23	7.28	7.34	7.44	7.39	7.24	7.60	7.38	7.33
NT	7.11	7.10	7.30	7.06	7.33	7.37	7.44	7.45	7.51	7.42	7.47	7.44	7.5
NT	7.58	7.70	7.51	7.73	7.82	7.83	7.92	7.89	7.96	7.90	8.00	8.11	7.96
NT	7.07	7.06	7.24	7.21	7.35	7.41	7.38	7.54	7.47	7.46	7.59	7.49	7.39
NT	6.83	6.88	6.93	7.12	7.23	7.17	7.44	7.19	7.26	7.09	7.27	7.19	7.17
NT	7.35	7.43	7.45	7.65	7.81	7.72	7.95	7.71	7.92	7.83	7.83	7.67	7.78
NT	7.03	7.12	7.23	7.26	7.53	7.48	7.65	7.43	7.54	7.48	7.58	7.48	7.44
NT	7.15	7.24	7.25	7.33	7.32	7.46	7.52	7.55	7.58	7.60	7.54	7.49	7.64
NT	6.88	6.94	6.92	7.07	7.08	7.18	7.25	7.14	7.31	7.22	7.25	7.17	7.33
NT	7.26	7.32	7.36	7.20	7.47	7.53	7.58	7.52	7.81	7.55	7.53	7.63	7.6
NT	6.93	7.00	7.05	7.30	7.20	7.25	7.29	7.30	7.30	7.34	7.23	7.36	7.47
NT	7.41	7.37	7.35	7.58	7.67	7.67	7.75	7.78	7.79	7.67	7.85	7.63	7.89
NT	7.02	7.02	7.00	7.28	7.36	7.30	7.34	7.34	7.29	7.55	7.37	7.45	7.32
NT	7.17	7.19	7.26	7.33	7.46	7.38	7.47	7.56	7.53	7.55	7.63	7.47	7.54
NT	6.75	6.82	6.73	7.13	7.03	7.09	7.10	7.16	7.32	7.21	7.21	7.12	6.98
NT	7.54	7.61	7.56	7.77	7.78	7.84	7.85	7.85	7.64	8.04	7.83	7.83	8.04

NT	7.20	7.19	7.38	7.26	7.43	7.52	7.48	7.60	7.74	7.51	7.50	7.46	7.58
NT	6.99	7.04	7.11	7.20	7.21	7.20	7.26	7.42	7.28	7.41	7.49	7.53	7.45
NT	7.27	7.27	7.50	7.45	7.45	7.60	7.59	7.62	7.65	7.77	7.64	7.59	7.4
NT	6.86	6.90	7.04	7.22	7.09	7.19	7.11	7.28	7.27	7.28	7.28	7.26	7.26
NT	7.44	7.46	7.63	7.70	7.70	7.71	7.78	7.75	8.01	7.76	7.75	7.86	7.89
IHE	6.83	6.85	6.75	6.96	7.03	6.99	7.12	7.17	7.17	7.06	7.16	7.17	7.36
IHE	7.34	7.33	7.39	7.47	7.45	7.58	7.63	7.67	7.66	7.84	7.81	7.70	7.71
IHE	7.67	7.66	7.64	7.85	7.86	7.89	7.95	8.00	8.05	7.93	7.88	8.12	8.07
IHE	6.94	6.95	6.98	6.96	7.08	7.16	7.20	7.27	7.35	7.32	7.29	7.23	7.11
IHE	7.12	7.13	7.32	7.08	7.30	7.26	7.40	7.51	7.42	7.53	7.52	7.51	7.54
IHE	6.73	6.73	6.90	6.91	6.86	6.94	7.08	7.03	7.06	7.00	6.93	7.05	7.09
IHE	7.50	7.45	7.46	7.83	7.70	7.73	7.74	7.97	7.83	7.73	7.87	7.87	7.83
IHE	6.97	7.02	7.00	6.99	7.14	7.29	7.28	7.28	7.18	7.38	7.30	7.16	7.22
IHE	7.24	7.25	6.38	7.41	7.52	7.53	7.60	7.58	7.42	7.51	7.51	7.59	7.45
IHE	7.03	7.02	7.05	7.20	7.20	7.25	7.31	7.42	7.37	7.21	7.55	7.37	7.31
IHE	7.13	7.09	7.32	7.06	7.30	7.34	7.41	7.43	7.49	7.39	7.42	7.43	7.48
IHE	7.60	7.69	7.53	7.73	7.79	7.80	7.89	7.87	7.94	7.87	7.95	8.10	7.94
IHE	7.09	7.05	7.26	7.21	7.32	7.38	7.35	7.52	7.45	7.43	7.54	7.48	7.37
IHE	6.85	6.87	6.95	7.12	7.05	7.22	7.16	7.17	7.24	7.06	7.22	7.18	7.15
IHE	7.37	7.42	7.47	7.65	7.61	7.62	7.59	7.69	7.90	7.80	7.78	7.66	7.76
IHE	7.05	7.11	7.25	7.26	7.20	7.31	7.33	7.41	7.52	7.45	7.53	7.47	7.42
IHE	7.17	7.23	7.27	7.33	7.29	7.43	7.49	7.53	7.56	7.57	7.49	7.48	7.62
IHE	6.90	6.93	6.94	7.07	7.05	7.15	7.22	7.12	7.29	7.19	7.20	7.16	7.31
IHE	7.28	7.31	7.38	7.20	7.44	7.50	7.55	7.50	7.79	7.52	7.48	7.62	7.58
IHE	6.95	6.99	7.07	7.30	7.17	7.22	7.26	7.28	7.28	7.31	7.18	7.35	7.45
IHE	7.43	7.36	7.37	7.58	7.64	7.64	7.72	7.76	7.77	7.64	7.80	7.62	7.87
IHE	7.04	7.01	7.02	7.28	7.33	7.27	7.31	7.32	7.27	7.52	7.32	7.44	7.30
IHE	7.19	7.18	7.28	7.33	7.43	7.35	7.44	7.54	7.51	7.52	7.58	7.46	7.52
IHE	6.77	6.81	6.75	7.13	7.00	7.06	7.07	7.14	7.30	7.18	7.16	7.11	6.96
IHE	7.56	7.60	7.58	7.77	7.75	7.81	7.82	7.83	7.62	8.01	7.78	7.82	8.02
IHE	7.22	7.18	7.40	7.26	7.40	7.49	7.45	7.58	7.72	7.48	7.45	7.45	7.56
IHE	7.01	7.03	7.13	7.20	7.18	7.17	7.23	7.40	7.26	7.38	7.44	7.52	7.43
IHE	7.29	7.26	7.52	7.45	7.42	7.57	7.56	7.60	7.63	7.74	7.59	7.58	7.38
IHE	6.88	6.89	7.06	7.22	7.06	7.16	7.08	7.26	7.25	7.25	7.23	7.25	7.24
IHE	7.46	7.45	7.65	7.70	7.67	7.68	7.75	7.73	7.98	7.73	7.70	7.85	7.87

Table 6: Descriptive statistics (RBC)

	Group	Mean	Standard deviation	Sample size
Pre	IHT	7.16	0.256	30
	NT	7.15	0.266	30
	IHE	7.15	0.256	30
W1	IHT	7.23	0.257	30
	NT	7.19	0.266	30
	IHE	7.16	0.253	30
W2	IHT	7.26	0.255	30
	NT	7.24	0.264	30

	IHE	7.20	0.297	30
W3	IHT	7.33	0.275	30
	NT	7.34	0.277	30
	IHE	7.32	0.273	30
W4	IHT	7.53	0.263	30
	NT	7.42	0.279	30
	IHE	7.34	0.263	30
W5	IHT	7.63	0.253	30
	NT	7.45	0.272	30
	IHE	7.39	0.251	30
W6	IHT	7.67	0.251	30
	NT	7.51	0.267	30
	IHE	7.43	0.251	30
W7	IHT	7.73	0.257	30
	NT	7.52	0.256	30
	IHE	7.49	0.256	30
W8	IHT	7.77	0.265	30
	NT	7.56	0.277	30
	IHE	7.51	0.269	30
W9	IHT	7.74	0.273	30
	NT	7.53	0.272	30
	IHE	7.49	0.267	30
W10	IHT	7.75	0.270	30
	NT	7.56	0.270	30
	IHE	7.49	0.257	30
W11	IHT	7.75	0.282	30
	NT	7.53	0.289	30
	IHE	7.49	0.275	30
W12	IHT	7.74	0.308	30
	NT	7.55	0.300	30
	IHE	7.50	0.286	30

Table 7: Paired comparison of time (RBC)

Group	Time (a)	Time (b)	Mean difference (a-b)	P value	95% CI of mean difference	
					Low level	Upper level
IHT	Pre	W1	-0.07	0.000	-0.08	-0.05
		W2	-0.10	0.000	-0.15	-0.05
		W3	-0.17	0.000	-0.21	-0.13
		W4	-0.36	0.000	-0.39	-0.34
		W5	-0.47	0.000	-0.48	-0.45
		W6	-0.51	0.000	-0.53	-0.48
		W7	-0.56	0.000	-0.59	-0.54
		W8	-0.61	0.000	-0.65	-0.56
		W9	-0.58	0.000	-0.62	-0.53
		W10	-0.59	0.000	-0.64	-0.54
		W11	-0.58	0.000	-0.62	-0.54

		W12	-0.57	0.000	-0.62	-0.52
	W1	Pre	0.07	0.000	0.05	0.08
		W2	-0.03	0.224	-0.09	0.02
		W3	-0.10	0.000	-0.15	-0.06
		W4	-0.30	0.000	-0.33	-0.27
		W5	-0.40	0.000	-0.42	-0.38
		W6	-0.44	0.000	-0.47	-0.42
		W7	-0.50	0.000	-0.53	-0.47
		W8	-0.54	0.000	-0.59	-0.49
		W9	-0.51	0.000	-0.55	-0.47
		W10	-0.52	0.000	-0.57	-0.48
		W11	-0.52	0.000	-0.56	-0.48
		W12	-0.51	0.000	-0.56	-0.45
	W2	Pre	0.10	0.000	0.05	0.15
		W1	0.03	0.224	-0.02	0.09
		W3	-0.07	0.043	-0.14	0.00
		W4	-0.27	0.000	-0.32	-0.21
		W5	-0.37	0.000	-0.42	-0.32
		W6	-0.41	0.000	-0.46	-0.35
		W7	-0.47	0.000	-0.52	-0.41
		W8	-0.51	0.000	-0.57	-0.45
		W9	-0.48	0.000	-0.54	-0.41
		W10	-0.49	0.000	-0.56	-0.42
		W11	-0.48	0.000	-0.55	-0.42
		W12	-0.47	0.000	-0.55	-0.40
	W3	Pre	0.17	0.000	0.13	0.21
		W1	0.10	0.000	0.06	0.15
		W2	0.07	0.043	0.00	0.14
		W4	-0.20	0.000	-0.24	-0.15
		W5	-0.30	0.000	-0.34	-0.26
		W6	-0.34	0.000	-0.38	-0.29
		W7	-0.40	0.000	-0.44	-0.35
		W8	-0.44	0.000	-0.50	-0.38
		W9	-0.41	0.000	-0.46	-0.35
		W10	-0.42	0.000	-0.48	-0.36
		W11	-0.41	0.000	-0.46	-0.36
		W12	-0.40	0.000	-0.47	-0.34
	W4	Pre	0.36	0.000	0.34	0.39
		W1	0.30	0.000	0.27	0.33
		W2	0.27	0.000	0.21	0.32
		W3	0.20	0.000	0.15	0.24
		W5	-0.10	0.000	-0.13	-0.08
		W6	-0.14	0.000	-0.16	-0.12
		W7	-0.20	0.000	-0.23	-0.17
		W8	-0.24	0.000	-0.30	-0.19
		W9	-0.21	0.000	-0.26	-0.16
		W10	-0.23	0.000	-0.28	-0.18

		W11	-0.22	0.000	-0.26	-0.17
		W12	-0.21	0.000	-0.26	-0.15
	W5	Pre	0.47	0.000	0.45	0.48
		W1	0.40	0.000	0.38	0.42
		W2	0.37	0.000	0.32	0.42
		W3	0.30	0.000	0.26	0.34
		W4	0.10	0.000	0.08	0.13
		W6	-0.04	0.001	-0.07	-0.02
		W7	-0.10	0.000	-0.13	-0.07
		W8	-0.14	0.000	-0.19	-0.09
		W9	-0.11	0.000	-0.16	-0.06
		W10	-0.12	0.000	-0.17	-0.08
		W11	-0.12	0.000	-0.16	-0.07
		W12	-0.11	0.001	-0.17	-0.05
	W6	Pre	0.51	0.000	0.48	0.53
		W1	0.44	0.000	0.42	0.47
		W2	0.41	0.000	0.35	0.46
		W3	0.34	0.000	0.29	0.38
		W4	0.14	0.000	0.12	0.16
		W5	0.04	0.001	0.02	0.07
		W7	-0.06	0.001	-0.09	-0.02
		W8	-0.10	0.000	-0.15	-0.05
		W9	-0.07	0.007	-0.12	-0.02
		W10	-0.08	0.001	-0.13	-0.03
		W11	-0.08	0.001	-0.12	-0.03
		W12	-0.07	0.023	-0.12	-0.01
	W7	Pre	0.56	0.000	0.54	0.59
		W1	0.50	0.000	0.47	0.53
		W2	0.47	0.000	0.41	0.52
		W3	0.40	0.000	0.35	0.44
		W4	0.20	0.000	0.17	0.23
		W5	0.10	0.000	0.07	0.13
		W6	0.06	0.001	0.02	0.09
		W8	-0.04	0.113	-0.10	0.01
		W9	-0.01	0.674	-0.06	0.04
		W10	-0.03	0.281	-0.07	0.02
		W11	-0.02	0.459	-0.06	0.03
		W12	-0.01	0.822	-0.07	0.05
	W8	Pre	0.61	0.000	0.56	0.65
		W1	0.54	0.000	0.49	0.59
		W2	0.51	0.000	0.45	0.57
		W3	0.44	0.000	0.38	0.50
		W4	0.24	0.000	0.19	0.30
		W5	0.14	0.000	0.09	0.19
		W6	0.10	0.000	0.05	0.15
		W7	0.04	0.113	-0.01	0.10

		W9	0.03	0.261	-0.02	0.09
		W10	0.02	0.470	-0.03	0.07
		W11	0.03	0.283	-0.02	0.07
		W12	0.04	0.201	-0.02	0.09
	W9	Pre	0.58	0.000	0.53	0.62
		W1	0.51	0.000	0.47	0.55
		W2	0.48	0.000	0.41	0.54
		W3	0.41	0.000	0.35	0.46
		W4	0.21	0.000	0.16	0.26
		W5	0.11	0.000	0.06	0.16
		W6	0.07	0.007	0.02	0.12
		W7	0.01	0.674	-0.04	0.06
		W8	-0.03	0.261	-0.09	0.02
		W10	-0.01	0.512	-0.06	0.03
		W11	-0.01	0.771	-0.05	0.04
		W12	0.00	0.883	-0.05	0.06
	W10	Pre	0.59	0.000	0.54	0.64
		W1	0.52	0.000	0.48	0.57
		W2	0.49	0.000	0.42	0.56
		W3	0.42	0.000	0.36	0.48
		W4	0.23	0.000	0.18	0.28
		W5	0.12	0.000	0.08	0.17
		W6	0.08	0.001	0.03	0.13
		W7	0.03	0.281	-0.02	0.07
		W8	-0.02	0.470	-0.07	0.03
		W9	0.01	0.512	-0.03	0.06
		W11	0.01	0.686	-0.03	0.05
		W12	0.02	0.460	-0.03	0.07
	W11	Pre	0.58	0.000	0.54	0.62
		W1	0.52	0.000	0.48	0.56
		W2	0.48	0.000	0.42	0.55
		W3	0.41	0.000	0.36	0.46
		W4	0.22	0.000	0.17	0.26
		W5	0.12	0.000	0.07	0.16
		W6	0.08	0.001	0.03	0.12
		W7	0.02	0.459	-0.03	0.06
		W8	-0.03	0.283	-0.07	0.02
		W9	0.01	0.771	-0.04	0.05
		W10	-0.01	0.686	-0.05	0.03
		W12	0.01	0.642	-0.03	0.05
	W12	Pre	0.57	0.000	0.52	0.62
		W1	0.51	0.000	0.45	0.56
		W2	0.47	0.000	0.40	0.55
		W3	0.40	0.000	0.34	0.47
		W4	0.21	0.000	0.15	0.26
		W5	0.11	0.001	0.05	0.17
		W6	0.07	0.023	0.01	0.12

		W7	0.01	0.822	-0.05	0.07
		W8	-0.04	0.201	-0.09	0.02
		W9	0.00	0.883	-0.06	0.05
		W10	-0.02	0.460	-0.07	0.03
		W11	-0.01	0.642	-0.05	0.03
NT	Pre	W1	-0.04	0.000	-0.05	-0.02
		W2	-0.08	0.001	-0.13	-0.04
		W3	-0.19	0.000	-0.23	-0.15
		W4	-0.26	0.000	-0.28	-0.24
		W5	-0.29	0.000	-0.31	-0.28
		W6	-0.36	0.000	-0.38	-0.33
		W7	-0.37	0.000	-0.39	-0.34
		W8	-0.40	0.000	-0.45	-0.36
		W9	-0.37	0.000	-0.42	-0.33
		W10	-0.41	0.000	-0.45	-0.36
		W11	-0.38	0.000	-0.42	-0.34
		W12	-0.39	0.000	-0.44	-0.34
	W1	Pre	0.04	0.000	0.02	0.05
		W2	-0.05	0.082	-0.10	0.01
		W3	-0.15	0.000	-0.19	-0.11
		W4	-0.22	0.000	-0.25	-0.20
		W5	-0.26	0.000	-0.28	-0.24
		W6	-0.32	0.000	-0.35	-0.29
		W7	-0.33	0.000	-0.36	-0.30
		W8	-0.37	0.000	-0.41	-0.32
		W9	-0.34	0.000	-0.38	-0.29
		W10	-0.37	0.000	-0.42	-0.32
		W11	-0.34	0.000	-0.38	-0.30
		W12	-0.35	0.000	-0.41	-0.30
	W2	Pre	0.08	0.001	0.04	0.13
		W1	0.05	0.082	-0.01	0.10
		W3	-0.10	0.004	-0.17	-0.04
		W4	-0.18	0.000	-0.23	-0.12
		W5	-0.21	0.000	-0.26	-0.16
		W6	-0.27	0.000	-0.33	-0.22
		W7	-0.28	0.000	-0.34	-0.23
		W8	-0.32	0.000	-0.38	-0.26
		W9	-0.29	0.000	-0.35	-0.23
		W10	-0.32	0.000	-0.39	-0.25
		W11	-0.30	0.000	-0.36	-0.23
		W12	-0.31	0.000	-0.38	-0.23
	W3	Pre	0.19	0.000	0.15	0.23
		W1	0.15	0.000	0.11	0.19
		W2	0.10	0.004	0.04	0.17
		W4	-0.07	0.001	-0.11	-0.03
		W5	-0.11	0.000	-0.15	-0.07
		W6	-0.17	0.000	-0.22	-0.12

		W7	-0.18	0.000	-0.22	-0.14
		W8	-0.22	0.000	-0.28	-0.16
		W9	-0.19	0.000	-0.24	-0.13
		W10	-0.22	0.000	-0.28	-0.16
		W11	-0.19	0.000	-0.24	-0.14
		W12	-0.20	0.000	-0.27	-0.14
	W4	Pre	0.26	0.000	0.24	0.28
		W1	0.22	0.000	0.20	0.25
		W2	0.18	0.000	0.12	0.23
		W3	0.07	0.001	0.03	0.11
		W5	-0.03	0.009	-0.06	-0.01
		W6	-0.10	0.000	-0.12	-0.07
		W7	-0.10	0.000	-0.13	-0.07
		W8	-0.14	0.000	-0.19	-0.09
		W9	-0.11	0.000	-0.16	-0.06
		W10	-0.15	0.000	-0.20	-0.10
		W11	-0.12	0.000	-0.16	-0.07
		W12	-0.13	0.000	-0.19	-0.07
	W5	Pre	0.29	0.000	0.28	0.31
		W1	0.26	0.000	0.24	0.28
		W2	0.21	0.000	0.16	0.26
		W3	0.11	0.000	0.07	0.15
		W4	0.03	0.009	0.01	0.06
		W6	-0.06	0.000	-0.09	-0.04
		W7	-0.07	0.000	-0.10	-0.04
		W8	-0.11	0.000	-0.16	-0.06
		W9	-0.08	0.001	-0.13	-0.04
		W10	-0.11	0.000	-0.16	-0.07
		W11	-0.09	0.000	-0.13	-0.04
		W12	-0.10	0.001	-0.16	-0.04
	W6	Pre	0.36	0.000	0.33	0.38
		W1	0.32	0.000	0.29	0.35
		W2	0.27	0.000	0.22	0.33
		W3	0.17	0.000	0.12	0.22
		W4	0.10	0.000	0.07	0.12
		W5	0.06	0.000	0.04	0.09
		W7	-0.01	0.601	-0.04	0.03
		W8	-0.05	0.063	-0.10	0.00
		W9	-0.02	0.487	-0.07	0.03
		W10	-0.05	0.048	-0.10	0.00
		W11	-0.02	0.304	-0.07	0.02
		W12	-0.04	0.218	-0.09	0.02
	W7	Pre	0.37	0.000	0.34	0.39
		W1	0.33	0.000	0.30	0.36
		W2	0.28	0.000	0.23	0.34
		W3	0.18	0.000	0.14	0.22
		W4	0.10	0.000	0.07	0.13

		W5	0.07	0.000	0.04	0.10
		W6	0.01	0.601	-0.03	0.04
		W8	-0.04	0.158	-0.09	0.02
		W9	-0.01	0.742	-0.06	0.04
		W10	-0.04	0.072	-0.09	0.00
		W11	-0.02	0.523	-0.06	0.03
		W12	-0.03	0.381	-0.09	0.03
	W8	Pre	0.40	0.000	0.36	0.45
		W1	0.37	0.000	0.32	0.41
		W2	0.32	0.000	0.26	0.38
		W3	0.22	0.000	0.16	0.28
		W4	0.14	0.000	0.09	0.19
		W5	0.11	0.000	0.06	0.16
		W6	0.05	0.063	0.00	0.10
		W7	0.04	0.158	-0.02	0.09
		W9	0.03	0.298	-0.03	0.09
		W10	0.00	0.856	-0.05	0.04
		W11	0.02	0.330	-0.02	0.07
		W12	0.01	0.674	-0.04	0.07
	W9	Pre	0.37	0.000	0.33	0.42
		W1	0.34	0.000	0.29	0.38
		W2	0.29	0.000	0.23	0.35
		W3	0.19	0.000	0.13	0.24
		W4	0.11	0.000	0.06	0.16
		W5	0.08	0.001	0.04	0.13
		W6	0.02	0.487	-0.03	0.07
		W7	0.01	0.742	-0.04	0.06
		W8	-0.03	0.298	-0.09	0.03
		W10	-0.03	0.125	-0.08	0.01
		W11	-0.01	0.771	-0.05	0.04
		W12	-0.02	0.517	-0.07	0.04
	W10	Pre	0.41	0.000	0.36	0.45
		W1	0.37	0.000	0.32	0.42
		W2	0.32	0.000	0.25	0.39
		W3	0.22	0.000	0.16	0.28
		W4	0.15	0.000	0.10	0.20
		W5	0.11	0.000	0.07	0.16
		W6	0.05	0.048	0.00	0.10
		W7	0.04	0.072	0.00	0.09
		W8	0.00	0.856	-0.04	0.05
		W9	0.03	0.125	-0.01	0.08
		W11	0.03	0.169	-0.01	0.07
		W12	0.02	0.519	-0.03	0.07
	W11	Pre	0.38	0.000	0.34	0.42
		W1	0.34	0.000	0.30	0.38
		W2	0.30	0.000	0.23	0.36
		W3	0.19	0.000	0.14	0.24

		W4	0.12	0.000	0.07	0.16
		W5	0.09	0.000	0.04	0.13
		W6	0.02	0.304	-0.02	0.07
		W7	0.02	0.523	-0.03	0.06
		W8	-0.02	0.330	-0.07	0.02
		W9	0.01	0.771	-0.04	0.05
		W10	-0.03	0.169	-0.07	0.01
		W12	-0.01	0.611	-0.06	0.03
	W12	Pre	0.39	0.000	0.34	0.44
		W1	0.35	0.000	0.30	0.41
		W2	0.31	0.000	0.23	0.38
		W3	0.20	0.000	0.14	0.27
		W4	0.13	0.000	0.07	0.19
		W5	0.10	0.001	0.04	0.16
		W6	0.04	0.218	-0.02	0.09
		W7	0.03	0.381	-0.03	0.09
		W8	-0.01	0.674	-0.07	0.04
		W9	0.02	0.517	-0.04	0.07
		W10	-0.02	0.519	-0.07	0.03
		W11	0.01	0.611	-0.03	0.06
IHE	Pre	W1	-0.01	0.300	-0.02	0.01
		W2	-0.05	0.053	-0.10	0.00
		W3	-0.16	0.000	-0.21	-0.12
		W4	-0.19	0.000	-0.21	-0.17
		W5	-0.24	0.000	-0.26	-0.22
		W6	-0.28	0.000	-0.30	-0.26
		W7	-0.33	0.000	-0.35	-0.31
		W8	-0.36	0.000	-0.40	-0.31
		W9	-0.33	0.000	-0.38	-0.29
		W10	-0.34	0.000	-0.38	-0.29
		W11	-0.34	0.000	-0.38	-0.30
		W12	-0.34	0.000	-0.40	-0.29
	W1	Pre	0.01	0.300	-0.01	0.02
		W2	-0.04	0.131	-0.09	0.01
		W3	-0.16	0.000	-0.20	-0.11
		W4	-0.18	0.000	-0.21	-0.15
		W5	-0.23	0.000	-0.25	-0.21
		W6	-0.27	0.000	-0.30	-0.25
		W7	-0.32	0.000	-0.35	-0.30
		W8	-0.35	0.000	-0.40	-0.30
		W9	-0.32	0.000	-0.37	-0.28
		W10	-0.33	0.000	-0.38	-0.28
		W11	-0.33	0.000	-0.37	-0.29
		W12	-0.34	0.000	-0.39	-0.28
	W2	Pre	0.05	0.053	0.00	0.10
		W1	0.04	0.131	-0.01	0.09
		W3	-0.12	0.001	-0.18	-0.05

		W4	-0.14	0.000	-0.20	-0.08
		W5	-0.19	0.000	-0.24	-0.14
		W6	-0.23	0.000	-0.29	-0.18
		W7	-0.28	0.000	-0.34	-0.23
		W8	-0.31	0.000	-0.37	-0.25
		W9	-0.28	0.000	-0.35	-0.22
		W10	-0.29	0.000	-0.36	-0.22
		W11	-0.29	0.000	-0.36	-0.23
		W12	-0.30	0.000	-0.37	-0.22
	W3	Pre	0.16	0.000	0.12	0.21
		W1	0.16	0.000	0.11	0.20
		W2	0.12	0.001	0.05	0.18
		W4	-0.02	0.237	-0.07	0.02
		W5	-0.08	0.000	-0.12	-0.04
		W6	-0.12	0.000	-0.16	-0.07
		W7	-0.17	0.000	-0.21	-0.13
		W8	-0.19	0.000	-0.25	-0.13
		W9	-0.17	0.000	-0.23	-0.11
		W10	-0.17	0.000	-0.23	-0.11
		W11	-0.18	0.000	-0.23	-0.13
		W12	-0.18	0.000	-0.24	-0.12
	W4	Pre	0.19	0.000	0.17	0.21
		W1	0.18	0.000	0.15	0.21
		W2	0.14	0.000	0.08	0.20
		W3	0.02	0.237	-0.02	0.07
		W5	-0.05	0.000	-0.08	-0.03
		W6	-0.09	0.000	-0.11	-0.07
		W7	-0.15	0.000	-0.18	-0.11
		W8	-0.17	0.000	-0.22	-0.12
		W9	-0.14	0.000	-0.19	-0.09
		W10	-0.15	0.000	-0.20	-0.10
		W11	-0.15	0.000	-0.20	-0.11
		W12	-0.16	0.000	-0.21	-0.10
	W5	Pre	0.24	0.000	0.22	0.26
		W1	0.23	0.000	0.21	0.25
		W2	0.19	0.000	0.14	0.24
		W3	0.08	0.000	0.04	0.12
		W4	0.05	0.000	0.03	0.08
		W6	-0.04	0.002	-0.06	-0.02
		W7	-0.09	0.000	-0.12	-0.06
		W8	-0.12	0.000	-0.16	-0.07
		W9	-0.09	0.000	-0.14	-0.05
		W10	-0.10	0.000	-0.15	-0.05
		W11	-0.10	0.000	-0.15	-0.06
		W12	-0.10	0.001	-0.16	-0.05
	W6	Pre	0.28	0.000	0.26	0.30
		W1	0.27	0.000	0.25	0.30

		W2	0.23	0.000	0.18	0.29
		W3	0.12	0.000	0.07	0.16
		W4	0.09	0.000	0.07	0.11
		W5	0.04	0.002	0.02	0.06
		W7	-0.05	0.003	-0.09	-0.02
		W8	-0.08	0.003	-0.13	-0.03
		W9	-0.05	0.039	-0.10	0.00
		W10	-0.06	0.031	-0.11	-0.01
		W11	-0.06	0.010	-0.11	-0.02
		W12	-0.06	0.025	-0.12	-0.01
	W7	Pre	0.33	0.000	0.31	0.35
		W1	0.32	0.000	0.30	0.35
		W2	0.28	0.000	0.23	0.34
		W3	0.17	0.000	0.13	0.21
		W4	0.15	0.000	0.11	0.18
		W5	0.09	0.000	0.06	0.12
		W6	0.05	0.003	0.02	0.09
		W8	-0.02	0.380	-0.08	0.03
		W9	0.00	0.968	-0.05	0.05
		W10	0.00	0.908	-0.05	0.04
		W11	-0.01	0.749	-0.05	0.04
		W12	-0.01	0.702	-0.07	0.05
	W8	Pre	0.36	0.000	0.31	0.40
		W1	0.35	0.000	0.30	0.40
		W2	0.31	0.000	0.25	0.37
		W3	0.19	0.000	0.13	0.25
		W4	0.17	0.000	0.12	0.22
		W5	0.12	0.000	0.07	0.16
		W6	0.08	0.003	0.03	0.13
		W7	0.02	0.380	-0.03	0.08
		W9	0.02	0.387	-0.03	0.08
		W10	0.02	0.389	-0.03	0.07
		W11	0.02	0.497	-0.03	0.06
		W12	0.01	0.665	-0.04	0.07
	W9	Pre	0.33	0.000	0.29	0.38
		W1	0.32	0.000	0.28	0.37
		W2	0.28	0.000	0.22	0.35
		W3	0.17	0.000	0.11	0.23
		W4	0.14	0.000	0.09	0.19
		W5	0.09	0.000	0.05	0.14
		W6	0.05	0.039	0.00	0.10
		W7	0.00	0.968	-0.05	0.05
		W8	-0.02	0.387	-0.08	0.03
		W10	0.00	0.867	-0.05	0.04
		W11	-0.01	0.702	-0.05	0.04
		W12	-0.01	0.650	-0.07	0.04
	W10	Pre	0.34	0.000	0.29	0.38

		W1	0.33	0.000	0.28	0.38
		W2	0.29	0.000	0.22	0.36
		W3	0.17	0.000	0.11	0.23
		W4	0.15	0.000	0.10	0.20
		W5	0.10	0.000	0.05	0.15
		W6	0.06	0.031	0.01	0.11
		W7	0.00	0.908	-0.04	0.05
		W8	-0.02	0.389	-0.07	0.03
		W9	0.00	0.867	-0.04	0.05
		W11	-0.01	0.813	-0.04	0.03
		W12	-0.01	0.727	-0.06	0.04
	W11	Pre	0.34	0.000	0.30	0.38
		W1	0.33	0.000	0.29	0.37
		W2	0.29	0.000	0.23	0.36
		W3	0.18	0.000	0.13	0.23
		W4	0.15	0.000	0.11	0.20
		W5	0.10	0.000	0.06	0.15
		W6	0.06	0.010	0.02	0.11
		W7	0.01	0.749	-0.04	0.05
		W8	-0.02	0.497	-0.06	0.03
		W9	0.01	0.702	-0.04	0.05
		W10	0.01	0.813	-0.03	0.04
		W12	0.00	0.857	-0.05	0.04
	W12	Pre	0.34	0.000	0.29	0.40
		W1	0.34	0.000	0.28	0.39
		W2	0.30	0.000	0.22	0.37
		W3	0.18	0.000	0.12	0.24
		W4	0.16	0.000	0.10	0.21
		W5	0.10	0.001	0.05	0.16
		W6	0.06	0.025	0.01	0.12
		W7	0.01	0.702	-0.05	0.07
		W8	-0.01	0.665	-0.07	0.04
		W9	0.01	0.650	-0.04	0.07
		W10	0.01	0.727	-0.04	0.06
		W11	0.00	0.857	-0.04	0.05

Table 8: Paired comparison of groups (RBC).

Time	Group (a)	Group (b)	Mean difference (a-b)	P value	95% CI of mean difference	
					Low level	Upper level
Pre	IHT	NT	0.01	0.882	-0.12	0.14
		IHE	0.01	0.870	-0.12	0.14
	NT	IHT	-0.01	0.882	-0.14	0.12
		IHE	0.00	0.988	-0.13	0.13
W1	IHT	IHE	-0.01	0.870	-0.14	0.12
		NT	0.00	0.988	-0.13	0.13
	IHT	NT	0.04	0.578	-0.10	0.17

		IHE	0.07	0.314	-0.07	0.20
	NT	IHT	-0.04	0.578	-0.17	0.10
		IHE	0.03	0.651	-0.10	0.16
	IHE	IHT	-0.07	0.314	-0.20	0.07
		NT	-0.03	0.651	-0.16	0.10
W2	IHT	NT	0.02	0.745	-0.12	0.16
		IHE	0.06	0.399	-0.08	0.20
	NT	IHT	-0.02	0.745	-0.16	0.12
		IHE	0.04	0.604	-0.10	0.18
	IHE	IHT	-0.06	0.399	-0.20	0.08
		NT	-0.04	0.604	-0.18	0.10
W3	IHT	NT	-0.01	0.896	-0.15	0.13
		IHE	0.02	0.819	-0.13	0.16
	NT	IHT	0.01	0.896	-0.13	0.15
		IHE	0.03	0.718	-0.12	0.17
	IHE	IHT	-0.02	0.819	-0.16	0.13
		NT	-0.03	0.718	-0.17	0.12
W4	IHT	NT	0.11	0.110	-0.03	0.25
		IHE	0.19	0.008	0.05	0.33
	NT	IHT	-0.11	0.110	-0.25	0.03
		IHE	0.08	0.282	-0.06	0.21
	IHE	IHT	-0.19	0.008	-0.33	-0.05
		NT	-0.08	0.282	-0.21	0.06
W5	IHT	NT	0.18	0.008	0.05	0.31
		IHE	0.24	0.001	0.10	0.37
	NT	IHT	-0.18	0.008	-0.31	-0.05
		IHE	0.06	0.413	-0.08	0.19
	IHE	IHT	-0.24	0.001	-0.37	-0.10
		NT	-0.06	0.413	-0.19	0.08
W6	IHT	NT	0.16	0.018	0.03	0.29
		IHE	0.24	0.001	0.11	0.37
	NT	IHT	-0.16	0.018	-0.29	-0.03
		IHE	0.08	0.242	-0.05	0.21
	IHE	IHT	-0.24	0.001	-0.37	-0.11
		NT	-0.08	0.242	-0.21	0.05
W7	IHT	NT	0.21	0.002	0.08	0.34
		IHE	0.24	0.000	0.11	0.37
	NT	IHT	-0.21	0.002	-0.34	-0.08
		IHE	0.03	0.609	-0.10	0.17
	IHE	IHT	-0.24	0.000	-0.37	-0.11
		NT	-0.03	0.609	-0.17	0.10
W8	IHT	NT	0.21	0.003	0.08	0.35
		IHE	0.26	0.000	0.12	0.40
	NT	IHT	-0.21	0.003	-0.35	-0.08
		IHE	0.05	0.490	-0.09	0.19
	IHE	IHT	-0.26	0.000	-0.40	-0.12
		NT	-0.05	0.490	-0.19	0.09

W9	IHT	NT	0.21	0.003	0.07	0.35
		IHE	0.25	0.000	0.12	0.39
	NT	IHT	-0.21	0.003	-0.35	-0.07
		IHE	0.04	0.537	-0.10	0.18
	IHE	IHT	-0.25	0.000	-0.39	-0.12
		NT	-0.04	0.537	-0.18	0.10
W10	IHT	NT	0.19	0.006	0.06	0.33
		IHE	0.27	0.000	0.13	0.40
	NT	IHT	-0.19	0.006	-0.33	-0.06
		IHE	0.07	0.288	-0.06	0.21
	IHE	IHT	-0.27	0.000	-0.40	-0.13
		NT	-0.07	0.288	-0.21	0.06
W11	IHT	NT	0.21	0.005	0.07	0.36
		IHE	0.25	0.001	0.11	0.40
	NT	IHT	-0.21	0.005	-0.36	-0.07
		IHE	0.04	0.572	-0.10	0.19
	IHE	IHT	-0.25	0.001	-0.40	-0.11
		NT	-0.04	0.572	-0.19	0.10
W12	IHT	NT	0.19	0.016	0.04	0.34
	IHT	IHE	0.24	0.003	0.09	0.39
		IHT	-0.19	0.016	-0.34	-0.04
	NT	IHE	0.05	0.529	-0.10	0.20
		IHT	-0.24	0.003	-0.39	-0.09
	IHE	NT	-0.05	0.529	-0.20	0.10

Table 9: Original data (HCT).

Group	Pre	W1	W2	W3	W4	W5	W6	W7	W8	W9	W10	W11	W12
IHT	44.89	47.27	45.67	45.38	46.87	46.73	47.98	50.97	51.38	51.24	51.98	52.86	52.11
IHT	40.13	41.52	39.51	42.37	45.75	43.19	46.03	44.82	48.73	48.42	47.64	49.16	49.37
IHT	40.45	41.10	40.67	41.05	43.02	44.00	45.05	45.42	47.82	49.23	49.38	49.25	49.53
IHT	39.82	38.45	40.69	41.13	43.86	47.87	44.72	47.24	48.22	47.15	47.80	48.70	48.72
IHT	35.48	35.10	36.33	39.02	39.40	44.13	45.99	44.14	46.58	44.23	44.22	43.17	44.57
IHT	34.92	36.13	36.46	36.98	36.60	34.87	41.14	41.00	45.44	43.68	44.89	43.56	44.70
IHT	38.47	38.58	38.53	39.71	41.43	43.18	49.91	46.59	45.69	48.54	47.56	47.49	47.18
IHT	38.52	39.39	39.88	40.48	39.97	45.54	45.15	50.75	46.75	45.86	47.18	48.76	47.91
IHT	35.72	34.26	35.73	38.95	40.70	43.65	43.83	42.96	47.76	44.38	46.30	49.49	47.63
IHT	37.82	37.15	39.67	39.43	41.56	42.46	47.33	43.05	45.98	46.48	46.48	46.58	46.91
IHT	39.38	40.83	40.44	38.24	42.42	41.39	45.12	39.10	50.34	45.89	48.00	48.09	48.49
IHT	40.51	42.19	42.46	41.43	42.20	46.57	50.41	50.48	47.19	48.86	49.41	49.09	49.71
IHT	38.66	38.65	39.79	42.44	41.85	40.50	42.46	37.98	49.27	46.92	48.20	48.47	47.58
IHT	37.88	38.97	38.39	41.57	40.31	41.19	48.13	48.29	47.29	47.43	46.93	48.81	47.25
IHT	47.75	40.14	41.99	40.55	38.75	42.36	42.24	50.23	50.11	50.39	50.59	49.97	49.29
IHT	36.30	37.40	36.72	38.82	39.40	44.00	40.98	50.18	47.28	45.30	44.60	45.64	45.38
IHT	36.29	36.17	36.47	38.38	40.50	41.80	40.41	51.96	45.72	45.83	43.97	45.66	47.77
IHT	40.40	38.30	39.98	42.39	41.21	40.05	44.86	51.44	48.88	49.06	48.65	49.70	49.93
IHT	41.22	39.25	41.50	44.05	42.82	47.87	45.93	51.85	50.65	47.61	49.62	50.05	50.24

IHT	40.44	40.18	41.40	42.31	47.52	47.32	48.03	51.97	50.26	50.75	49.94	50.00	49.84
IHT	38.13	38.02	38.44	39.97	41.42	40.53	44.25	45.70	44.89	46.58	47.42	46.80	47.38
IHT	37.25	40.04	37.22	38.60	41.99	41.39	44.56	45.86	44.70	46.54	47.93	46.27	46.24
IHT	39.95	39.48	39.12	41.67	42.03	43.26	43.30	49.52	48.75	49.76	48.61	49.31	48.95
IHT	39.60	39.14	40.51	41.73	39.15	44.01	46.65	51.95	47.00	49.95	49.30	49.35	48.86
IHT	41.47	41.84	44.19	43.85	44.45	42.49	41.88	51.67	49.59	50.53	50.32	50.74	50.34
IHT	43.01	44.27	43.30	43.91	49.39	45.09	47.40	44.17	53.66	50.47	51.81	52.51	51.61
IHT	42.94	44.29	44.78	43.46	46.48	42.24	48.40	51.14	52.74	51.83	51.43	50.85	51.45
IHT	38.28	38.67	38.64	42.70	38.18	46.03	43.23	46.34	49.78	48.87	46.22	47.96	47.25
IHT	40.76	42.85	41.06	42.48	47.81	45.72	49.60	48.25	51.42	50.92	49.57	50.35	49.07
IHT	38.33	38.31	39.29	42.31	44.11	43.35	39.57	45.94	49.19	45.64	47.53	47.18	47.51
NT	44.89	47.27	45.70	45.18	46.67	46.83	47.53	49.87	49.48	49.74	49.98	50.76	50.01
NT	40.13	41.52	39.54	42.17	40.55	43.29	45.58	43.72	46.83	46.92	45.64	47.06	47.27
NT	40.45	41.10	40.70	40.85	42.82	44.10	44.60	44.32	45.92	47.73	47.38	47.15	47.43
NT	39.82	38.45	40.72	40.93	43.66	47.97	44.27	46.14	46.32	45.65	45.80	46.60	46.62
NT	35.48	35.10	36.36	38.82	39.20	44.23	45.54	43.04	44.68	42.73	42.22	41.07	42.47
NT	34.92	36.13	36.49	36.78	36.40	34.97	40.69	39.90	43.54	42.18	40.73	41.46	42.60
NT	38.47	38.58	38.56	39.51	41.23	43.28	49.46	45.49	43.79	47.04	45.56	45.39	45.08
NT	38.52	39.39	39.91	40.28	39.77	45.64	44.70	49.65	44.85	44.36	45.18	46.66	45.81
NT	35.72	34.26	35.76	38.75	37.53	38.17	42.90	41.86	45.86	42.88	44.30	43.39	45.53
NT	37.82	37.15	39.70	39.23	41.62	44.14	42.81	41.95	44.08	44.98	44.48	44.48	44.81
NT	39.38	40.83	40.47	38.04	47.17	44.09	46.36	38.00	48.44	44.39	46.00	45.99	46.39
NT	40.51	42.19	42.49	41.23	42.00	46.67	49.96	49.38	45.29	47.36	47.41	46.99	47.61
NT	38.66	38.65	39.82	42.24	41.65	40.60	42.01	36.88	47.37	45.42	42.20	46.37	45.48
NT	37.88	38.97	38.42	41.37	40.11	41.29	47.68	47.19	45.39	45.93	44.93	46.71	45.15
NT	38.68	39.86	40.41	40.07	40.49	40.12	44.55	43.76	48.95	46.69	45.03	46.36	45.59
NT	36.30	37.40	36.75	38.62	39.20	44.10	40.53	49.08	45.38	43.80	40.60	43.54	43.28
NT	36.29	36.17	36.50	38.18	40.30	41.90	39.96	50.86	43.82	44.33	41.97	43.56	45.67
NT	40.40	38.30	40.01	42.19	41.01	40.15	44.41	50.34	46.98	47.56	42.65	47.60	47.83
NT	41.22	39.25	41.53	43.85	42.62	47.97	45.48	50.75	48.75	46.11	42.62	47.95	48.14
NT	40.44	40.18	41.43	42.11	47.32	47.42	47.58	50.87	48.36	49.25	42.94	47.90	47.74
NT	38.13	38.02	38.47	39.77	41.22	40.63	43.80	44.60	42.99	45.08	43.42	44.70	45.28
NT	37.25	40.04	37.25	38.40	41.79	41.49	44.11	44.76	42.80	45.04	45.93	44.17	44.14
NT	45.38	45.52	47.05	45.64	45.71	52.83	45.73	49.66	50.81	49.25	55.22	49.28	50.04
NT	39.60	39.14	40.54	41.53	38.95	44.11	46.20	50.85	45.10	48.45	47.30	47.25	46.76
NT	41.47	41.84	44.22	43.65	44.25	42.59	41.43	50.57	47.69	49.03	48.32	48.64	48.24
NT	43.01	44.27	43.33	43.71	49.19	45.19	46.95	43.07	51.76	48.97	49.81	50.41	49.51
NT	42.94	44.29	44.81	43.26	46.28	42.34	47.95	50.04	50.84	50.33	49.43	48.75	49.35
NT	38.28	38.67	38.67	42.50	37.98	46.13	42.78	45.24	47.88	47.37	54.22	45.86	45.15
NT	40.76	42.85	41.09	42.28	47.61	45.82	49.15	40.15	49.52	49.42	57.57	48.25	46.97
NT	38.33	38.31	39.32	42.11	43.91	40.45	39.12	44.84	47.29	46.14	58.53	45.08	45.41
IHE	44.89	47.22	45.44	39.58	46.97	47.53	47.08	48.97	48.38	48.94	48.98	49.86	49.11
IHE	40.13	41.47	39.28	42.57	40.85	43.99	45.13	42.82	45.73	46.12	44.64	46.16	46.37
IHE	40.45	41.05	40.44	41.25	43.12	44.80	44.15	43.42	44.82	46.93	46.38	46.25	46.53
IHE	39.82	38.40	40.46	41.33	43.96	48.67	43.82	45.24	45.22	44.85	44.80	45.70	45.72
IHE	35.48	35.05	36.10	39.22	39.50	44.93	45.09	42.14	43.58	41.93	41.22	40.17	41.57
IHE	34.92	36.08	36.23	37.18	36.70	35.67	40.24	39.00	42.44	41.38	39.73	40.56	41.70

IHE	38.47	38.53	38.30	39.91	41.53	43.98	49.01	44.59	42.69	46.24	44.56	44.49	44.18
IHE	38.52	39.34	39.65	40.68	40.07	46.34	44.25	48.75	43.75	43.56	44.18	45.76	44.91
IHE	35.72	34.21	35.50	39.15	37.83	38.87	42.45	40.96	44.76	42.08	43.30	42.49	44.63
IHE	37.82	37.10	39.44	39.63	41.92	44.84	42.36	41.05	42.98	44.18	43.48	43.58	43.91
IHE	39.38	40.78	40.21	38.44	47.47	44.79	45.91	37.10	47.34	43.59	45.00	45.09	45.49
IHE	40.51	42.14	42.23	41.63	42.30	47.37	49.51	48.48	44.19	46.56	46.41	46.09	46.71
IHE	38.66	38.60	39.56	42.64	41.95	41.30	41.56	35.98	46.27	44.62	45.20	45.47	44.58
IHE	37.88	38.92	38.16	41.77	40.41	41.99	47.23	46.29	44.29	45.13	43.93	45.81	44.25
IHE	40.75	40.09	41.76	40.75	38.85	43.16	41.34	48.23	47.11	48.09	47.59	46.97	46.29
IHE	36.30	37.35	36.49	39.02	39.50	44.80	40.08	48.18	44.28	43.00	41.60	42.64	42.38
IHE	36.29	36.12	36.24	38.58	40.60	42.60	39.51	49.96	42.72	43.53	40.97	42.66	44.77
IHE	40.40	38.25	39.75	42.59	41.31	40.85	43.96	49.44	45.88	46.76	45.65	46.70	46.93
IHE	41.22	39.20	41.27	44.25	42.92	48.67	45.03	49.85	47.65	45.31	46.62	47.05	47.24
IHE	40.44	40.13	41.17	42.51	47.62	48.12	47.13	49.97	47.26	48.45	46.94	47.00	46.84
IHE	38.13	37.97	38.21	40.17	41.52	41.33	43.35	43.70	41.89	44.28	44.42	43.80	44.38
IHE	37.25	39.99	36.99	38.80	42.09	42.19	43.66	43.86	41.70	44.24	44.93	43.27	43.24
IHE	45.38	45.47	46.79	46.04	46.01	53.53	45.28	48.76	49.71	48.45	49.22	48.38	49.14
IHE	39.60	39.09	40.28	41.93	39.25	44.81	45.75	49.95	44.00	47.65	46.30	46.35	45.86
IHE	41.47	41.79	43.96	44.05	44.55	43.29	40.98	49.67	46.59	48.23	47.32	47.74	47.34
IHE	43.01	44.22	43.07	44.11	49.49	45.89	46.50	42.17	50.66	48.17	48.81	49.51	48.61
IHE	42.94	44.24	44.55	43.66	46.58	43.04	47.50	49.14	49.74	49.53	48.43	47.85	48.45
IHE	38.28	38.62	38.41	42.90	38.28	46.83	42.33	44.34	46.78	46.57	43.22	44.96	44.25
IHE	40.76	42.80	40.83	42.68	47.91	46.52	48.70	46.25	48.42	48.62	46.57	47.35	46.07
IHE	38.33	38.26	39.06	42.51	44.21	44.15	38.67	43.94	46.19	45.34	44.53	44.18	44.51

Table 10: Descriptive statistics (HCT)

	Group	Mean	Standard deviation	Sample size		NT	44.79	2.851	30
Pre	IHT	39.49	2.779	30		IHE	44.25	2.904	30
	NT	39.37	2.563	30	W7	IHT	47.37	4.000	30
	IHE	39.44	2.571	30		NT	45.89	4.158	30
W1	IHT	39.60	2.800	30		IHE	45.41	4.029	30
	NT	39.79	3.001	30	W8	IHT	48.44	2.295	30
IHE	39.75	3.001	30	NT		46.69	2.444	30	
W2	IHT	39.96	2.533	30		IHE	45.57	2.424	30
	NT	40.20	2.816	30	W9	IHT	47.94	2.292	30
IHE	39.99	2.835	30	NT		46.47	2.241	30	
W3	IHT	41.18	2.043	30		IHE	45.74	2.284	30
	NT	41.11	2.216	30	W10	IHT	48.12	2.133	30
IHE	41.32	2.101	30	NT		46.58	4.681	30	
W4	IHT	42.37	3.089	30		IHE	45.16	2.400	30
	NT	42.27	3.286	30	W11	IHT	48.53	2.236	30
IHE	42.51	3.341	30	NT		46.31	2.337	30	
W5	IHT	43.43	2.744	30		IHE	45.46	2.354	30
	NT	43.62	3.468	30	W12	IHT	48.43	1.884	30
IHE	44.50	3.357	30	NT		46.38	2.002	30	
W6	IHT	45.15	2.899	30		IHE	45.53	2.001	30

Table 11: Paired comparison of time (HCT).

Group	Time (a)	Time (b)	Mean difference (a-b)	P value	95% CI of mean difference	
					Low level	Upper level
IHT	Pre	W1	-1.90	0.000	-2.09	-1.72
		W2	-2.37	0.000	-2.68	-2.05
		W3	-2.49	0.000	-2.95	-2.03
		W4	-3.31	0.000	-4.05	-2.57
		W5	-5.86	0.000	-7.09	-4.62
		W6	-6.54	0.000	-7.05	-6.04
		W7	-8.30	0.000	-8.53	-8.08
		W8	-8.89	0.000	-9.09	-8.69
		W9	-9.11	0.000	-9.56	-8.66
		W10	-9.87	0.000	-11.41	-8.33
		W11	-9.88	0.000	-10.08	-9.67
		W12	-9.77	0.000	-9.96	-9.58
	W1	Pre	1.90	0.000	1.72	2.09
		W2	-0.46	0.012	-0.82	-0.10
		W3	-0.59	0.036	-1.13	-0.04
		W4	-1.41	0.000	-2.11	-0.70
		W5	-3.95	0.000	-5.22	-2.68
		W6	-4.64	0.000	-5.19	-4.08
		W7	-6.40	0.000	-6.69	-6.11
		W8	-6.99	0.000	-7.26	-6.71
		W9	-7.20	0.000	-7.68	-6.73
		W10	-7.97	0.000	-9.50	-6.43
		W11	-7.97	0.000	-8.27	-7.67
		W12	-7.86	0.000	-8.12	-7.61
	W2	Pre	2.37	0.000	2.05	2.68
		W1	0.46	0.012	0.10	0.82
		W3	-0.12	0.676	-0.70	0.46
		W4	-0.94	0.021	-1.74	-0.14
		W5	-3.49	0.000	-4.68	-2.30
		W6	-4.18	0.000	-4.73	-3.62
		W7	-5.94	0.000	-6.35	-5.53
		W8	-6.53	0.000	-6.91	-6.15
		W9	-6.74	0.000	-7.30	-6.18
		W10	-7.51	0.000	-9.06	-5.95
		W11	-7.51	0.000	-7.93	-7.09
		W12	-7.40	0.000	-7.78	-7.03
	W3	Pre	2.49	0.000	2.03	2.95
		W1	0.59	0.036	0.04	1.13
		W2	0.12	0.676	-0.46	0.70
		W4	-0.82	0.076	-1.73	0.09
		W5	-3.37	0.000	-4.69	-2.04
		W6	-4.05	0.000	-4.67	-3.44
		W7	-5.81	0.000	-6.31	-5.32

		W8	-6.40	0.000	-6.91	-5.89
		W9	-6.62	0.000	-7.29	-5.95
		W10	-7.38	0.000	-8.99	-5.78
		W11	-7.39	0.000	-7.89	-6.89
		W12	-7.28	0.000	-7.76	-6.80
	W4	Pre	3.31	0.000	2.57	4.05
		W1	1.41	0.000	0.70	2.11
		W2	0.94	0.021	0.14	1.74
		W3	0.82	0.076	-0.09	1.73
		W5	-2.55	0.002	-4.17	-0.93
		W6	-3.23	0.000	-4.00	-2.46
		W7	-4.99	0.000	-5.78	-4.21
		W8	-5.58	0.000	-6.35	-4.82
		W9	-5.80	0.000	-6.67	-4.93
		W10	-6.56	0.000	-8.33	-4.79
		W11	-6.57	0.000	-7.34	-5.80
		W12	-6.46	0.000	-7.24	-5.67
	W5	Pre	5.86	0.000	4.62	7.09
		W1	3.95	0.000	2.68	5.22
		W2	3.49	0.000	2.30	4.68
		W3	3.37	0.000	2.04	4.69
		W4	2.55	0.002	0.93	4.17
		W6	-0.69	0.313	-2.03	0.66
		W7	-2.45	0.000	-3.68	-1.22
		W8	-3.04	0.000	-4.31	-1.76
		W9	-3.25	0.000	-4.48	-2.03
		W10	-4.02	0.000	-6.04	-1.99
		W11	-4.02	0.000	-5.27	-2.77
		W12	-3.91	0.000	-5.13	-2.70
	W6	Pre	6.54	0.000	6.04	7.05
		W1	4.64	0.000	4.08	5.19
		W2	4.18	0.000	3.62	4.73
		W3	4.05	0.000	3.44	4.67
		W4	3.23	0.000	2.46	4.00
		W5	0.69	0.313	-0.66	2.03
		W7	-1.76	0.000	-2.31	-1.21
		W8	-2.35	0.000	-2.89	-1.81
		W9	-2.56	0.000	-3.26	-1.87
		W10	-3.33	0.000	-4.94	-1.72
		W11	-3.33	0.000	-3.86	-2.81
		W12	-3.22	0.000	-3.76	-2.69
	W7	Pre	8.30	0.000	8.08	8.53
		W1	6.40	0.000	6.11	6.69
		W2	5.94	0.000	5.53	6.35
		W3	5.81	0.000	5.32	6.31
		W4	4.99	0.000	4.21	5.78
		W5	2.45	0.000	1.22	3.68

		W6	1.76	0.000	1.21	2.31
		W8	-0.59	0.000	-0.80	-0.38
		W9	-0.80	0.001	-1.25	-0.36
		W10	-1.57	0.052	-3.16	0.02
		W11	-1.57	0.000	-1.82	-1.33
		W12	-1.46	0.000	-1.68	-1.25
	W8	Pre	8.89	0.000	8.69	9.09
		W1	6.99	0.000	6.71	7.26
		W2	6.53	0.000	6.15	6.91
		W3	6.40	0.000	5.89	6.91
		W4	5.58	0.000	4.82	6.35
		W5	3.04	0.000	1.76	4.31
		W6	2.35	0.000	1.81	2.89
		W7	0.59	0.000	0.38	0.80
		W9	-0.22	0.341	-0.66	0.23
		W10	-0.98	0.222	-2.56	0.60
		W11	-0.98	0.000	-1.22	-0.75
		W12	-0.88	0.000	-1.09	-0.66
	W9	Pre	9.11	0.000	8.66	9.56
		W1	7.20	0.000	6.73	7.68
		W2	6.74	0.000	6.18	7.30
		W3	6.62	0.000	5.95	7.29
		W4	5.80	0.000	4.93	6.67
		W5	3.25	0.000	2.03	4.48
		W6	2.56	0.000	1.87	3.26
		W7	0.80	0.001	0.36	1.25
		W8	0.22	0.341	-0.23	0.66
		W10	-0.77	0.353	-2.39	0.86
		W11	-0.77	0.001	-1.22	-0.32
		W12	-0.66	0.004	-1.11	-0.21
	W10	Pre	9.87	0.000	8.33	11.41
		W1	7.97	0.000	6.43	9.50
		W2	7.51	0.000	5.95	9.06
		W3	7.38	0.000	5.78	8.99
		W4	6.56	0.000	4.79	8.33
		W5	4.02	0.000	1.99	6.04
		W6	3.33	0.000	1.72	4.94
		W7	1.57	0.052	-0.02	3.16
		W8	0.98	0.222	-0.60	2.56
		W9	0.77	0.353	-0.86	2.39
		W11	0.00	0.996	-1.57	1.56
		W12	0.11	0.894	-1.46	1.68
	W11	Pre	9.88	0.000	9.67	10.08
		W1	7.97	0.000	7.67	8.27
		W2	7.51	0.000	7.09	7.93
		W3	7.39	0.000	6.89	7.89
		W4	6.57	0.000	5.80	7.34

		W5	4.02	0.000	2.77	5.27
		W6	3.33	0.000	2.81	3.86
		W7	1.57	0.000	1.33	1.82
		W8	0.98	0.000	0.75	1.22
		W9	0.77	0.001	0.32	1.22
		W10	0.00	0.996	-1.56	1.57
		W12	0.11	0.331	-0.11	0.33
	W12	Pre	9.77	0.000	9.58	9.96
		W1	7.86	0.000	7.61	8.12
		W2	7.40	0.000	7.03	7.78
		W3	7.28	0.000	6.80	7.76
		W4	6.46	0.000	5.67	7.24
		W5	3.91	0.000	2.70	5.13
		W6	3.22	0.000	2.69	3.76
		W7	1.46	0.000	1.25	1.68
		W8	0.88	0.000	0.66	1.09
		W9	0.66	0.004	0.21	1.11
		W10	-0.11	0.894	-1.68	1.46
		W11	-0.11	0.331	-0.33	0.11
NT	Pre	W1	-1.04	0.000	-1.22	-0.85
		W2	-1.39	0.000	-1.71	-1.07
		W3	-1.39	0.000	-1.85	-0.93
		W4	-2.99	0.000	-3.73	-2.26
		W5	-3.41	0.000	-4.64	-2.17
		W6	-4.98	0.000	-5.49	-4.47
		W7	-6.10	0.000	-6.32	-5.87
		W8	-5.16	0.000	-5.36	-4.96
		W9	-5.16	0.000	-5.61	-4.71
		W10	-6.11	0.000	-7.65	-4.57
		W11	-6.14	0.000	-6.34	-5.94
		W12	-6.04	0.000	-6.23	-5.85
	W1	Pre	1.04	0.000	0.85	1.22
		W2	-0.35	0.055	-0.71	0.01
		W3	-0.35	0.204	-0.90	0.20
		W4	-1.95	0.000	-2.66	-1.25
		W5	-2.37	0.000	-3.64	-1.10
		W6	-3.94	0.000	-4.50	-3.39
		W7	-5.06	0.000	-5.34	-4.77
		W8	-4.12	0.000	-4.40	-3.85
		W9	-4.12	0.000	-4.60	-3.65
		W10	-5.08	0.000	-6.61	-3.54
		W11	-5.10	0.000	-5.40	-4.80
		W12	-5.00	0.000	-5.26	-4.75
	W2	Pre	1.39	0.000	1.07	1.71
		W1	0.35	0.055	-0.01	0.71
		W3	0.00	1.000	-0.58	0.58

		W4	-1.60	0.000	-2.40	-0.80
		W5	-2.02	0.001	-3.21	-0.83
		W6	-3.59	0.000	-4.15	-3.03
		W7	-4.71	0.000	-5.12	-4.30
		W8	-3.77	0.000	-4.15	-3.39
		W9	-3.77	0.000	-4.34	-3.21
		W10	-4.73	0.000	-6.28	-3.17
		W11	-4.75	0.000	-5.17	-4.33
		W12	-4.65	0.000	-5.03	-4.28
	W3	Pre	1.39	0.000	0.93	1.85
		W1	0.35	0.204	-0.20	0.90
		W2	0.00	1.000	-0.58	0.58
		W4	-1.60	0.001	-2.51	-0.70
		W5	-2.02	0.003	-3.34	-0.69
		W6	-3.59	0.000	-4.20	-2.98
		W7	-4.71	0.000	-5.20	-4.21
		W8	-3.77	0.000	-4.28	-3.26
		W9	-3.77	0.000	-4.44	-3.10
		W10	-4.73	0.000	-6.33	-3.12
		W11	-4.75	0.000	-5.25	-4.25
		W12	-4.65	0.000	-5.13	-4.17
	W4	Pre	2.99	0.000	2.26	3.73
		W1	1.95	0.000	1.25	2.66
		W2	1.60	0.000	0.80	2.40
		W3	1.60	0.001	0.70	2.51
		W5	-0.42	0.612	-2.04	1.21
		W6	-1.99	0.000	-2.76	-1.22
		W7	-3.11	0.000	-3.89	-2.32
		W8	-2.17	0.000	-2.93	-1.41
		W9	-2.17	0.000	-3.04	-1.30
		W10	-3.12	0.001	-4.89	-1.36
		W11	-3.15	0.000	-3.92	-2.38
		W12	-3.05	0.000	-3.83	-2.27
	W5	Pre	3.41	0.000	2.17	4.64
		W1	2.37	0.000	1.10	3.64
		W2	2.02	0.001	0.83	3.21
		W3		0.003	0.69	3.34
		W4	0.42	0.612	-1.21	2.04
		W6	-1.57	0.023	-2.92	-0.23
		W7	-2.69	0.000	-3.92	-1.46
		W8	-1.75	0.007	-3.03	-0.48
		W9	-1.75	0.005	-2.98	-0.53
		W10	-2.71	0.009	-4.73	-0.69
		W11	-2.73	0.000	-3.98	-1.49
		W12	-2.63	0.000	-3.85	-1.42
	W6	Pre	4.98	0.000	4.47	5.49
		W1	3.94	0.000	3.39	4.50

		W2	3.59	0.000	3.03	4.15
		W3	3.59	0.000	2.98	4.20
		W4	1.99	0.000	1.22	2.76
		W5	1.57	0.023	0.23	2.92
		W7	-1.12	0.000	-1.67	-0.56
		W8	-0.18	0.507	-0.72	0.36
		W9	-0.18	0.607	-0.88	0.52
		W10	-1.14	0.164	-2.74	0.47
		W11	-1.16	0.000	-1.68	-0.64
		W12	-1.06	0.000	-1.60	-0.52
	W7	Pre	6.10	0.000	5.87	6.32
		W1	5.06	0.000	4.77	5.34
		W2	4.71	0.000	4.30	5.12
		W3	4.71	0.000	4.21	5.20
		W4	3.11	0.000	2.32	3.89
		W5	2.69	0.000	1.46	3.92
		W6	1.12	0.000	0.56	1.67
		W8	0.94	0.000	0.73	1.14
		W9	0.94	0.000	0.49	1.38
		W10	-0.02	0.982	-1.60	1.57
		W11	-0.04	0.727	-0.29	0.20
		W12	0.06	0.609	-0.16	0.27
	W8	Pre	5.16	0.000	4.96	5.36
		W1	4.12	0.000	3.85	4.40
		W2	3.77	0.000	3.39	4.15
		W3	3.77	0.000	3.26	4.28
		W4	2.17	0.000	1.41	2.93
		W5	1.75	0.007	0.48	3.03
		W6	0.18	0.507	-0.36	0.72
		W7	-0.94	0.000	-1.14	-0.73
		W9	0.00	1.000	-0.45	0.45
		W10	-0.95	0.234	-2.54	0.63
		W11	-0.98	0.000	-1.21	-0.74
		W12	-0.88	0.000	-1.09	-0.67
	W9	Pre	5.16	0.000	4.71	5.61
		W1	4.12	0.000	3.65	4.60
		W2	3.77	0.000	3.21	4.34
		W3	3.77	0.000	3.10	4.44
		W4	2.17	0.000	1.30	3.04
		W5	1.75	0.005	0.53	2.98
		W6	0.18	0.607	-0.52	0.88
		W7	-0.94	0.000	-1.38	-0.49
		W8	0.00	1.000	-0.45	0.45
		W10	-0.95	0.247	-2.58	0.67
		W11	-0.98	0.000	-1.43	-0.52
		W12	-0.88	0.000	-1.33	-0.43

	W10	Pre	6.11	0.000	4.57	7.65
		W1	5.08	0.000	3.54	6.61
		W2	4.73	0.000	3.17	6.28
		W3	4.73	0.000	3.12	6.33
		W4	3.12	0.001	1.36	4.89
		W5	2.71	0.009	0.69	4.73
		W6	1.14	0.164	-0.47	2.74
		W7	0.02	0.982	-1.57	1.60
		W8	0.95	0.234	-0.63	2.54
		W9	0.95	0.247	-0.67	2.58
		W11	-0.03	0.975	-1.59	1.54
		W12	0.07	0.926	-1.50	1.64
	W11	Pre	6.14	0.000	5.94	6.34
		W1	5.10	0.000	4.80	5.40
		W2	4.75	0.000	4.33	5.17
		W3	4.75	0.000	4.25	5.25
		W4	3.15	0.000	2.38	3.92
		W5	2.73	0.000	1.49	3.98
		W6	1.16	0.000	0.64	1.68
		W7	0.04	0.727	-0.20	0.29
		W8	0.98	0.000	0.74	1.21
		W9	0.98	0.000	0.52	1.43
		W10	0.03	0.975	-1.54	1.59
		W12	0.10	0.380	-0.12	0.32
	W12	Pre	6.04	0.000	5.85	6.23
		W1	5.00	0.000	4.75	5.26
		W2	4.65	0.000	4.28	5.03
		W3	4.65	0.000	4.17	5.13
		W4	3.05	0.000	2.27	3.83
		W5	2.63	0.000	1.42	3.85
		W6	1.06	0.000	0.52	1.60
		W7	-0.06	0.609	-0.27	0.16
		W8	0.88	0.000	0.67	1.09
		W9	0.88	0.000	0.43	1.33
		W10	-0.07	0.926	-1.64	1.50
		W11	-0.10	0.380	-0.32	0.12
IHE	Pre	W1	-0.40	0.000	-0.59	-0.22
		W2	-0.86	0.000	-1.17	-0.54
		W3	-1.02	0.000	-1.48	-0.57
		W4	-1.91	0.000	-2.64	-1.17
		W5	-2.89	0.000	-4.12	-1.65
		W6	-4.54	0.000	-5.05	-4.03
		W7	-5.44	0.000	-5.67	-5.21
		W8	-4.73	0.000	-4.93	-4.53
		W9	-5.14	0.000	-5.59	-4.69
		W10	-5.60	0.000	-7.14	-4.06

		W11	-5.68	0.000	-5.88	-5.47
		W12	-5.58	0.000	-5.76	-5.39
	W1	Pre	0.40	0.000	0.22	0.59
		W2	-0.45	0.014	-0.81	-0.09
		W3	-0.62	0.027	-1.17	-0.07
		W4	-1.50	0.000	-2.21	-0.80
		W5	-2.48	0.000	-3.75	-1.21
		W6	-4.14	0.000	-4.69	-3.58
		W7	-5.04	0.000	-5.32	-4.75
		W8	-4.33	0.000	-4.60	-4.05
		W9	-4.74	0.000	-5.21	-4.26
		W10	-5.20	0.000	-6.74	-3.67
		W11	-5.27	0.000	-5.57	-4.97
		W12	-5.17	0.000	-5.43	-4.92
	W2	Pre	0.86	0.000	0.54	1.17
		W1	0.45	0.014	0.09	0.81
		W3	-0.17	0.571	-0.75	0.42
		W4	-1.05	0.010	-1.85	-0.25
		W5	-2.03	0.001	-3.22	-0.84
		W6	-3.68	0.000	-4.24	-3.13
		W7	-4.58	0.000	-4.99	-4.17
		W8	-3.88	0.000	-4.26	-3.50
		W9	-4.28	0.000	-4.85	-3.72
		W10	-4.75	0.000	-6.30	-3.19
		W11	-4.82	0.000	-5.24	-4.40
		W12	-4.72	0.000	-5.10	-4.35
	W3	Pre	1.02	0.000	0.57	1.48
		W1	0.62	0.027	0.07	1.17
		W2	0.17	0.571	-0.42	0.75
		W4	-0.89	0.056	-1.79	0.02
		W5	-1.86	0.006	-3.19	-0.54
		W6	-3.52	0.000	-4.13	-2.90
		W7	-4.42	0.000	-4.91	-3.92
		W8	-3.71	0.000	-4.22	-3.20
		W9	-4.12	0.000	-4.79	-3.44
		W10	-4.58	0.000	-6.19	-2.97
		W11	-4.65	0.000	-5.16	-4.15
		W12	-4.55	0.000	-5.03	-4.08
	W4	Pre	1.91	0.000	1.17	2.64
		W1	1.50	0.000	0.80	2.21
		W2	1.05	0.010	0.25	1.85
		W3	0.89	0.056	-0.02	1.79
		W5	-0.98	0.233	-2.60	0.64
		W6	-2.63	0.000	-3.40	-1.86
		W7	-3.53	0.000	-4.32	-2.74
		W8	-2.82	0.000	-3.59	-2.06
		W9	-3.23	0.000	-4.10	-2.36

		W10	-3.70	0.000	-5.47	-1.93
		W11	-3.77	0.000	-4.54	-3.00
		W12	-3.67	0.000	-4.45	-2.89
	W5	Pre	2.89	0.000	1.65	4.12
		W1	2.48	0.000	1.21	3.75
		W2	2.03	0.001	0.84	3.22
		W3	1.86	0.006	0.54	3.19
		W4	0.98	0.233	-0.64	2.60
		W6	-1.65	0.017	-3.00	-0.31
		W7	-2.55	0.000	-3.79	-1.32
		W8	-1.85	0.005	-3.12	-0.57
		W9	-2.25	0.000	-3.48	-1.03
		W10	-2.72	0.009	-4.74	-0.70
		W11	-2.79	0.000	-4.04	-1.54
		W12	-2.69	0.000	-3.91	-1.48
	W6	Pre	4.54	0.000	4.03	5.05
		W1	4.14	0.000	3.58	4.69
		W2	3.68	0.000	3.13	4.24
		W3	3.52	0.000	2.90	4.13
		W4	2.63	0.000	1.86	3.40
		W5	1.65	0.017	0.31	3.00
		W7	-0.90	0.002	-1.45	-0.35
		W8	-0.19	0.482	-0.73	0.35
		W9	-0.60	0.091	-1.30	0.10
		W10	-1.07	0.191	-2.67	0.54
		W11	-1.14	0.000	-1.66	-0.62
		W12	-1.04	0.000	-1.58	-0.50
	W7	Pre	5.44	0.000	5.21	5.67
		W1	5.04	0.000	4.75	5.32
		W2	4.58	0.000	4.17	4.99
		W3	4.42	0.000	3.92	4.91
		W4	3.53	0.000	2.74	4.32
		W5	2.55	0.000	1.32	3.79
		W6	0.90	0.002	0.35	1.45
		W8	0.71	0.000	0.50	0.91
		W9	0.30	0.185	-0.15	0.75
		W10	-0.17	0.837	-1.75	1.42
		W11	-0.24	0.060	-0.48	0.01
		W12	-0.14	0.210	-0.35	0.08
	W8	Pre	4.73	0.000	4.53	4.93
		W1	4.33	0.000	4.05	4.60
		W2	3.88	0.000	3.50	4.26
		W3	3.71	0.000	3.20	4.22
		W4	2.82	0.000	2.06	3.59
		W5	1.85	0.005	0.57	3.12
		W6	0.19	0.482	-0.35	0.73
		W7	-0.71	0.000	-0.91	-0.50

		W9	-0.41	0.072	-0.85	0.04
		W10	-0.87	0.276	-2.46	0.71
		W11	-0.94	0.000	-1.18	-0.71
		W12	-0.85	0.000	-1.06	-0.63
	W9	Pre	5.14	0.000	4.69	5.59
		W1	4.74	0.000	4.26	5.21
		W2	4.28	0.000	3.72	4.85
		W3	4.12	0.000	3.44	4.79
		W4	3.23	0.000	2.36	4.10
		W5	2.25	0.000	1.03	3.48
		W6	0.60	0.091	-0.10	1.30
		W7	-0.30	0.185	-0.75	0.15
		W8	0.41	0.072	-0.04	0.85
		W10	-0.47	0.572	-2.09	1.16
		W11	-0.54	0.021	-0.99	-0.08
		W12	-0.44	0.056	-0.89	0.01
	W10	Pre	5.60	0.000	4.06	7.14
		W1	5.20	0.000	3.67	6.74
		W2	4.75	0.000	3.19	6.30
		W3	4.58	0.000	2.97	6.19
		W4	3.70	0.000	1.93	5.47
		W5	2.72	0.009	0.70	4.74
		W6	1.07	0.191	-0.54	2.67
		W7	0.17	0.837	-1.42	1.75
		W8	0.87	0.276	-0.71	2.46
		W9	0.47	0.572	-1.16	2.09
		W11	-0.07	0.928	-1.63	1.49
		W12	0.03	0.972	-1.54	1.60
	W11	Pre	5.68	0.000	5.47	5.88
		W1	5.27	0.000	4.97	5.57
		W2	4.82	0.000	4.40	5.24
		W3	4.65	0.000	4.15	5.16
		W4	3.77	0.000	3.00	4.54
		W5	2.79	0.000	1.54	4.04
		W6	1.14	0.000	0.62	1.66
		W7	0.24	0.060	-0.01	0.48
		W8	0.94	0.000	0.71	1.18
		W9	0.54	0.021	0.08	0.99
		W10	0.07	0.928	-1.49	1.63
		W12	0.10	0.380	-0.12	0.32
	W12	Pre	5.58	0.000	5.39	5.76
		W1	5.17	0.000	4.92	5.43
		W2	4.72	0.000	4.35	5.10
		W3	4.55	0.000	4.08	5.03
		W4	3.67	0.000	2.89	4.45
		W5	2.69	0.000	1.48	3.91

		W6	1.04	0.000	0.50	1.58
		W7	0.14	0.210	-0.08	0.35
		W8	0.85	0.000	0.63	1.06
		W9	0.44	0.056	-0.01	0.89
		W10	-0.03	0.972	-1.60	1.54
		W11	-0.10	0.380	-0.32	0.12

Table 12: Paired comparison of groups (HCT).

Time	Group (a)	Group (b)	Mean difference (a-b)	P value	95% CI of mean difference	
					Low level	Upper level
Pre	IHT	NT	0.12	0.859	-1.23	1.48
		IHE	0.05	0.939	-1.30	1.41
	NT	IHT	-0.12	0.859	-1.48	1.23
		IHE	-0.07	0.920	-1.42	1.29
W1	IHE	IHT	-0.05	0.939	-1.41	1.30
		NT	0.07	0.920	-1.29	1.42
	IHT	NT	-0.19	0.801	-1.70	1.31
		IHE	-0.15	0.842	-1.66	1.36
	NT	IHT	0.19	0.801	-1.31	1.70
		IHE	0.04	0.957	-1.47	1.55
W2	IHE	IHT	0.15	0.842	-1.36	1.66
		NT	-0.04	0.957	-1.55	1.47
	IHT	NT	-0.24	0.735	-1.64	1.16
		IHE	-0.03	0.962	-1.44	1.37
	NT	IHT	0.24	0.735	-1.16	1.64
		IHE	0.21	0.771	-1.20	1.61
W3	IHE	IHT	0.03	0.962	-1.37	1.44
		NT	-0.21	0.771	-1.61	1.20
	IHT	NT	0.07	0.898	-1.02	1.16
		IHE	-0.14	0.800	-1.23	0.95
	NT	IHT	-0.07	0.898	-1.16	1.02
		IHE	-0.21	0.703	-1.30	0.88
W4	IHE	IHT	0.14	0.800	-0.95	1.23
		NT	0.21	0.703	-0.88	1.30
	IHT	NT	0.10	0.907	-1.57	1.76
		IHE	-0.14	0.870	-1.80	1.53
	NT	IHT	-0.10	0.907	-1.76	1.57
		IHE	-0.24	0.779	-1.90	1.43
W5	IHE	IHT	0.14	0.870	-1.53	1.80
		NT	0.24	0.779	-1.43	1.90
	IHT	NT	-0.19	0.818	-1.84	1.45
		IHE	-1.07	0.200	-2.71	0.58
	NT	IHT	0.19	0.818	-1.45	1.84
		IHE	-0.88	0.292	-2.52	0.77
	IHE	IHT	1.07	0.200	-0.58	2.71

		NT	0.88	0.292	-0.77	2.52
W6	IHT	NT	0.36	0.633	-1.12	1.84
		IHE	0.90	0.231	-0.58	2.38
	NT	IHT	-0.36	0.633	-1.84	1.12
		IHE	0.54	0.469	-0.94	2.02
	IHE	IHT	-0.90	0.231	-2.38	0.58
		NT	-0.54	0.469	-2.02	0.94
W7	IHT	NT	1.47	0.164	-0.61	3.56
		IHE	1.96	0.065	-0.13	4.04
	NT	IHT	-1.47	0.164	-3.56	0.61
		IHE	0.49	0.643	-1.60	2.57
	IHE	IHT	-1.96	0.065	-4.04	0.13
		NT	-0.49	0.643	-2.57	1.60
W8	IHT	NT	1.74	0.006	0.52	2.97
		IHE	2.87	0.000	1.64	4.09
	NT	IHT	-1.74	0.006	-2.97	-0.52
		IHE	1.13	0.072	-0.10	2.35
	IHE	IHT	-2.87	0.000	-4.09	-1.64
		NT	-1.13	0.072	-2.35	0.10
W9	IHT	NT	1.47	0.014	0.31	2.64
		IHE	2.20	0.000	1.03	3.37
	NT	IHT	-1.47	0.014	-2.64	-0.31
		IHE	0.73	0.219	-0.44	1.89
	IHE	IHT	-2.20	0.000	-3.37	-1.03
		NT	-0.73	0.219	-1.89	0.44
W10	IHT	NT	1.54	0.073	-0.15	3.22
		IHE	2.95	0.001	1.27	4.63
	NT	IHT	-1.54	0.073	-3.22	0.15
		IHE	1.42	0.098	-0.27	3.10
	IHE	IHT	-2.95	0.001	-4.63	-1.27
		NT	-1.42	0.098	-3.10	0.27
W11	IHT	NT	2.22	0.000	1.03	3.40
		IHE	3.06	0.000	1.88	4.25
	NT	IHT	-2.22	0.000	-3.40	-1.03
		IHE	0.85	0.158	-0.34	2.04
	IHE	IHT	-3.06	0.000	-4.25	-1.88
		NT	-0.85	0.158	-2.04	0.34
W12	IHT	NT	2.05	0.000	1.04	3.05
		IHE	2.89	0.000	1.89	3.90
	NT	IHT	-2.05	0.000	-3.05	-1.04
		IHE	0.85	0.098	-0.16	1.85
	IHE	IHT	-2.89	0.000	-3.90	-1.89
		NT	-0.85	0.098	-1.85	0.16

Thirdly, the equilibrium between erythrocyte production and senescence must be noted as an additional contributory factor. Newly generated erythrocytes increase the overall RBC count, while senescent erythrocytes are systematically phagocytosed and eliminated by the reticuloendothelial system, particularly the spleen [37]. As time advances, these complementary processes may reach a dynamic balance, thereby stabilizing the overall erythrocyte population.

Lastly, it is plausible to posit that extended periods of strenuous physical activity could induce fatigue in erythropoietic tissues such as the bone marrow, culminating in a diminished efficiency of RBC production.

Conclusion

In conclusion, our study underscored the potent facilitative impact of IHT on hematological parameters in Sprague-Dawley rats. Nonetheless, our data also pointed to the onset of a physiological plateau following extended periods of continuous hypoxic and/or physical stimuli, manifested by a deceleration in the rate of increase for HGB level, RBC Count, and HCT value. These empirical observations contribute valuable perspectives on the adaptive physiological mechanisms employed by mammals in hypoxic conditions and/or aerobic activity, thereby offering a substantive foundation for future investigative endeavors and potential therapeutic applications.

Declarations

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