The effect of different types of drugs on balance and reaction ability of female abstainers

Jingsong Wang

912079965@qq.com

Fujian Normal University

Research Article

Keywords: Anesthetic drugs, Psychotropic drugs, Mixed drugs, balance ability, reaction ability

Posted Date: August 7th, 2024

DOI: https://doi.org/10.21203/rs.3.rs-4727480/v1

Additional Declarations: No competing interests reported.

Abstract

OBJECTIVE: Drug abuse can damage a number of physiological functions of the human body to a certain extent, such as a phenomenon similar to neurasthenia to the nervous system, making the body unresponsive, walking unsteady, etc.; suggesting that drugintake may react to the body. The ability and balance control ability have an impact. This paper aims to compare the balance (dynamic and static) and reaction speeds of Anesthetic drugs, Psychotropic drugs and mixed drugs, and explore the differences in the effects of different types of drugs on the body's nervous control system.

METHODS: This experiment conducted a random sampling test on drug rehabilitation centers in eight provinces across the country to test the abstainers' dynamic balance ability and static balance ability.

RESULTS: The results obtained after the physical fitness test were compared. One-legged standing balance test: the abstainers who took the Psychotropic drugs stood longer than the Anesthetic drugs, but the mixed drugs did not differ. Star Excursion Balance Test: The overall appearance of large, small presents as Anesthetic drugs, mixed drugs and Psychotropic drugs. Reaction time: The overall reaction speed is from fast to slow: people who smoke Psychotropic drugs, those who use mixed drugs, and those who use Anesthetic drugs.

Conclusion: Psychotropic drugs will give priority to destroying the dynamic balance of the human body. Because mixed drugs are a combination of new and Anesthetic drugs, the damage to the dynamic balance of the human body is second only. The Anesthetic drugs have the priority to destroy the static balance of the human body. The reaction rate is the same as above, and the mixing is only second. However, its specific mechanism has yet to be further studied.

Introduction

In the 2018 World Drug Report, the number of deaths directly caused by drug use increased by 60% globally from 2000 to 2015. Heroin addicts have also significantly increased in various regions, with the number of heroin users over the past 12 years increasing from 0.16% from 2002 to 2004 to 0.26% from 2011 to 2013[1]. In China, the number of users of methamphetamine has also significantly increased. In 2012, the number of registered methamphetamine users nationwide reached 410000, accounting for 23% of all drug users[2]. Addiction to heroin and methamphetamine can cause some social problems, including the loss of human immune function[3]. Moreover, the most commonly used drugs in the world include marijuana, among others. The specific data will not be expanded yet, indicating how vast the social space occupied by drugs in society is.

Although the majority of addicts are male, women are more likely to become addicted; In some animal experiments, female rats are more sensitive to methamphetamine and amphetamine than male rats and are more likely to resume drug seeking behavior [4]. In rhesus monkeys, female monkeys are also more sensitive to psychoactive drugs than males [5]; These all suggest that female individuals are more sensitive, prone to addiction, and relapse to nerve stimulants such as methamphetamine (MA). Although

women usually start using drugs later than men, once they start using drugs, they are more likely to develop into severe addicts than men [6]; And it has rapidly developed into a drug addiction disorder. This test is mainly aimed at female audiences to understand the impact of different drug use methods on women's neural control ability.

There are various types of drugs [7–8], mainly divided into two categories: Anesthetic drugs and Psychotropic drugs. Anesthetic drugs are extracted from natural herbaceous plants; The Psychotropic drugs mainly rely on artificially synthesized chemical agents - methamphetamine and its derivatives; Both anesthetic and psychotropic drugs have certain damaging effects on various systems of the human body. A study has found that the serum copper content of individuals who consume opium and heroin is significantly higher than that of normal individuals, indicating that drugs may have a certain damaging effect on the human nervous system. However, the specific mechanisms and locations of damage vary, such as in the nervous system: Anesthetic drugs mainly damage the nucleus accumbens, dorsal central gray matter, caudate nucleus, amygdala, nucleus accumbens, hippocampus, and frontal cortex when attacking neurons in the human body, while methamphetamine mainly damages the striatum [9]. Therefore, it can be concluded that there are differences in the mechanisms of damage between Anesthetic drugs and Psychotropic drugs to the human body; We speculate that there are differences in the mechanisms of harm to the human body caused by traditional, new, and mixed drug use.

One-legged standing balance test is a simple test method for static balance ability. It measures the time the body's center of gravity is maintained on the single foot support surface by relying solely on the balance receptors of the vestibular organs of the brain and the coordinated movement of the muscles of the whole body, without any visible reference objects, to reflect the strength of balance ability [10]. The shorter the time, the poorer the balance and physical fitness.Star Excursion Balance Test (SEBT) is a simple, reliable, and low-cost testing method that can replace complex instruments [11.12.13] SEBT are dynamic stability tests that can provide accurate evaluation of lower limb function. Reaction time is one of the most commonly used psychological activities in psychological experimental research, which reveals various characteristics of human information processing through detailed analysis of reaction time. Reaction time is the incubation period for the nervous system to respond to external stimuli, including many stages such as "reception input decision transmission execution". Any problem in any stage will affect the speed of reaction time [14]. The neural activity of this process includes two aspects: peripheral and central; Therefore, damage to peripheral and central nervous system activity can also affect the speed of response time.

The purpose of this experiment is to explore the damage of three different drug use methods on the human nervous control system through the above three tests, providing a theoretical basis for future research on the impact of different drug use methods on the nervous system

Research objects and methods

Subjects

2950 participants were recruited from China's compulsory isolation and rehabilitation centers, and each center selected healthy abstainers who were able to participate in physical examinations according to actual conditions (without underlying cardiovascular and cerebrovascular, metabolic diseases and autoimmune diseases as well as major trauma). A total of 2950 participants participated in this experiment, and 2731 valid test data were obtained. The grouping is shown in Table 1. Informed consent form has been signed before testing. The research subjects were divided into three groups based on the type of drug use: Anesthesia drugs group (abuse of opioids, cocaine, marijuana and its products, etc.), Psychotropic drugs group (abuse of central nervous system stimulants, suppressants, and hallucinogens, etc.), and mixed abuse group (mixed abuse of anesthesia and psychotropic drugs).This study follows the Helsinki Declaration, and all participants provided informed consent and voluntarily participated. Declaration of Human Ethics and Consent to Participation: Applicable.

Table 1
Basic Information of Test Participants

Age (year)	Anesthetic drugs	Psychotropic drugs	Mixed drugs
10–20	11	116	14
21–30	151	738	83
31–40	296	406	121
41–50	416	155	117
51–60	86	11	10
Amount	N = 2731		

There is a certain degree of compulsion and standardization in China's compulsory isolation and drug rehabilitation centers. Therefore, there are relatively few other influencing factors. This eliminates a significant portion of external factors that may interfere with the experimental results. Before the test, all participants should first engage in simple jogging warm-up and joint activities; During the testing process, professional personnel will first provide training. After the training is completed, practice three to four times and become proficient in testing techniques before starting the testing. All tests were conducted under the supervision of the same researcher, and before testing the subjects, leg length was measured using a distance measuring instrument and body weight was recorded using a digital scale. Record the participants' dates of birth and leg strengths and other relevant information.

Research method

Star Excursion Balance Test(SEBT)

The test grid is glued onto the laboratory floor using three standard 140cm long adhesive tapes. The tape extends from the center point to the front, rear inner, and rear outer sides. The goniometer

measures 135 degrees from the front straight line to both sides to determine the rear inner and rear outer sides, with a 45 degree angle between the rear. The star offset balance test refers to the test in which the subject is supported on one leg, maintains body balance, and stands at the center point (with their feet immovable), while the unsupported leg extends to the farthest distance in three directions: forward, right, and left. After reaching the farthest distance, the unsupported leg must return to its starting position each time. The indicator for testing is the average maximum extension distance divided by the length of the lower limb. The larger the indicator number, the better the balance ability [15–16].

Normalize the distance achieved to limb length by calculating: offset distance ÷ limb length x 100 = maximum percentage of arrival distance [17].

One-legged standing balance test

The requirement for standing on a single legged field with closed eyes is simple, and the tester can conduct the test by holding a stopwatch.

The traditional test method for standing with closed eyes and one foot is to use a stopwatch to time. During the test, the subject naturally stands. When the "start" command is heard (and the tester opens the watch to time), close both eyes and stand with the dominant leg on one foot. The non dominant leg is lifted off the ground and cannot be placed against the supporting leg, with both hands akimbo. When the subject moves or lifts their feet to the ground, the tester stops the watch. The accuracy of testing is influenced by human factors, and the workload is high during large-scale testing. Test twice, take the best score, record in seconds, and keep two decimal places.

Reaction time testing

Use JH-2008 reaction time tester. The testing instrument is operated by a dedicated person and only measures the average reaction time of simple red light. Before testing, the testing method is explained to the subjects before testing. During the photo reaction, continuously measure 5 times and then calculate the average value. Each data item is automatically recorded and the average value is calculated by the machine.

Statistical analysis

Using the SPSS 22.0 statistical software package for statistical analysis, the significance level of the hypothesis test was set at 0.05, and the Shapiro Walk method was used to perform normality tests on the data. For data that conforms to a normal distribution, single factor ANOVA analysis is used for inter group comparison. For data that does not conform to a normal distribution, rank sum test is used for inter group comparison. The results are expressed as mean ± standard deviation.

Result

Star offset balance test

Aged to 10–20

Table 2
Star excursion balance test for female abstainers aged 10–20

		Anesthetic drugs	Psychotropic drugs	Mixed drugs
1	Dom	62.21 ± 9.45	57.08 ± 10.74	55.34 ± 12.39
	Non-Dom	61.86 ± 14.39	55.10 ± 10.51	56.23 ± 12.40
2	Dom	55.74 ± 11.47$^{\#}$	44.43 ± 19.02	46.61 ± 17.30
	Non-Dom	57.97 ± 10.27$^{*\ \#\#}$	42.77 ± 18.71	45.38 ± 15.55
3	Dom	43.09 ± 15.87$^{\#}$	31.90 ± 14.77	31.91 ± 12.76
	Non-Dom	44.22 ± 15.60$^{\#\#}$	31.10 ± 13.94	34.01 ± 15.21

(Note: Traditional and new are represented by #, traditional and mixed *, new and mixed @; $p < 0.05$: #, *, @, $p < 0.01$: # #, *, @)

In the age range of 10 to 20 years old, overall, those who use Anesthetic drugs perform better than those who use Psychotropic drugs, while those who use mixed drugs fall between the two.

In the Dom (2,3) and Non Dom (3) movements, the performance of traditional drug users was better than that of new drug users ($p < 0.05$, $p < 0.01$). Although mixed drug users were between the two, there was no significant difference;

In Non Dom (2), traditional drug user were significantly better than new drug user and mixed drug user ($p < 0.01$), but there was no difference between new and mixed drug user;See Table 2.

Aged 21–30

Table 3
Star excursion balance test for female abstainers aged 21–30

Anesthetic drugs	Psychotropic drugs	Mixed drugs		
1	Dom	58.94 ± 11.05##	54.74 ± 10.89	56.71 ± 10.59
	Non-Dom	56.72 ± 10.43##	53.67 ± 11.00	55.41 ± 11.06
2	Dom	53.24 ± 14.74* ##	42.85 ± 18.65	48.23 ± 16.54@@
	Non-Dom	50.96 ± 14.99##	42.33 ± 18.21	48.14 ± 16.45@@
3	Dom	37.22 ± 12.95##	30.98 ± 13.87	35.25 ± 13.42@@
	Non-Dom	35.17 ± 12.80##	30.63 ± 17.52	33.79 ± 13.15@

(Note: Traditional and new are represented by #, traditional and mixed *, new and mixed @; $p < 0.05$: #, *, @, $p < 0.01$: # #, *, @)

The results in the age range of 21–30 years are as follows: all traditional drug user performed significantly better than new drug user ($p < 0.01$, occasionally $p < 0.05$); The mixed inhalers were between the two ($p < 0.01$, $p < 0.05$); Few controls have no differences.See Table 3.

Aged 31 to 40

Table 4
Star excursion balance test for female abstainers aged 31 to 40

Anesthetic drugs	Psychotropic drugs	Mixed drugs		
1	Dom	54.44 ± 10.39##	52.32 ± 9.64	55.20 ± 9.46@@
	Non-Dom	53.44 ± 10.60#	51.93 ± 9.61	54.30 ± 9.55@
2	Dom	44.95 ± 16.22##	36.48 ± 18.45	44.94 ± 18.32@@
	Non-Dom	43.75 ± 15.81##	35.45 ± 17.86	43.46 ± 17.64@@
3	Dom	32.41 ± 12.68##	26.30 ± 12.31	31.14 ± 13.37@@
	Non-Dom	30.99 ± 12.06##	24.36 ± 11.92	29.37 ± 13.15@@

(Note: Traditional and new are represented by #, traditional and mixed *, new and mixed @; $p < 0.05$: #, *, @, $p < 0.01$: # #, *, @)

In the age group of 31 to 40 years old, the overall performance is as follows: those who use Anesthetic drugs have significantly better performance than those who use Psychotropic drugs ($p < 0.01$, occasionally $p < 0.05$). The breakdown results are as follows:

(1) In Dom (2,3) and Non Dom (2,3), traditional drug user performed better than new drug user, while mixed drug user were between the two ($p < 0.01$, occasionally $p < 0.05$).

(2) In the Dom (1) and Non Dom (1) movements, mixed drug user performed significantly better than new drug user ($p < 0.01$, occasionally $p < 0.05$), while traditional drug user were between the two.See Table 4.

Aged 41 to 50

Table 5
Star excursion balance test for female abstainers aged 41 to 50

Anesthetic drugs	Psychotropic drugs	Mixed drugs		
1	Dom	53.78 ± 11.59$^{\#\#}$	50.47 ± 9.74	54.71 ± 9.86$^{@@}$
	Non-Dom	52.84 ± 10.75$^{\#\#}$	50.15 ± 10.51	54.22 ± 10.58$^{@@}$
2	Dom	44.33 ± 16.36$^{\#\#}$	30.17 ± 19.13	41.30 ± 16.79$^{@@}$
	Non-Dom	42.43 ± 15.49$^{\#\#}$	28.96 ± 18.16	40.50 ± 16.91$^{@@}$
3	Dom	31.66 ± 12.41$^{\#\#}$	22.63 ± 12.39	29.03 ± 12.90$^{@@}$
	Non-Dom	29.18 ± 11.92$^{\#\#}$	21.24 ± 12.48	28.45 ± 13.14$^{@@}$
(Note: Traditional and new are represented by #, traditional and mixed *, new and mixed @; $p < 0.05$: #, *, @, $p < 0.01$: # #, *, @)				
In the age range of 41 to 50 years old, the overall results are as follows: those who use Anesthetic drugs have significantly better performance than those who use Psychotropic drugs ($p < 0.01$); The performance of mixed drug user was significantly better than that of new drug user ($p < 0.01$). The breakdown results are as follows:				

(1) In Dom (2,3) and Non Dom (2,3), traditional drug user performed better than new drug user, while mixed drug user were between the two ($p < 0.01$, occasionally $p < 0.05$).

(2) In the movements of Dom (1) and Non Dom (1), mixed drug user performed significantly better than new drug user ($p < 0.01$, occasionally $p < 0.05$), while traditional drug user were between the two. See Table 5.

Aged 51 to 60

Table 6
Star excursion balance test for female abstainers aged 51 to 60

Anesthetic drugs	Psychotropic drugs	Mixed drugs		
1	Dom	51.61 ± 11.54**	53.15 ± 8.93	40.42 ± 20.06
	Non-Dom	50.91 ± 10.92	51.90 ± 7.40	43.74 ± 17.83
2	Dom	42.38 ± 17.12	34.61 ± 14.40	33.94 ± 14.72
	Non-Dom	40.12 ± 16.96#	29.54 ± 12.65	32.50 ± 12.86
3	Dom	30.16 ± 13.30*	27.45 ± 11.48	20.08 ± 13.43
	Non-Dom	28.29 ± 13.31*	23.60 ± 8.51	18.41 ± 10.67

(Note: Traditional and new are represented by #, traditional and mixed *, new and mixed @; $p < 0.05$: #, *, @, $p < 0.01$: # #, *, @)

The overall difference is not significant in the age range of 51 to 60 years old. In Dom (3) and Non Dom (3), the performance of traditional drug user is better than that of mixed drug user ($p < 0.01$, $p < 0.05$), and there is no difference in the new type.See Table 6.

One-legged standing balance test

Table 7
One-legged standing balance test for female abstainers

Age(year)	Anesthetic drugs	Psychotropic drugs	Mixed drugs
10–20	16.38 ± 10.93	27.30 ± 29.32	27.20 ± 23.12
21–30	18.84 ± 19.30	22.83 ± 21.81#	22.99 ± 19.57
31–40	17.26 ± 14.60	21.51 ± 22.19##	19.82 ± 16.57
41–50	15.27 ± 13.28	16.87 ± 18.23	17.97 ± 15.53
51–60	10.98 ± 9.08	16.59 ± 16.80	15.42 ± 27.98

(Note: Traditional and new are represented by #, traditional and mixed *, new and mixed @; $p < 0.05$: #, *, @, $p < 0.01$: # #, *, @)

From the Table 7, it can be concluded that there are differences between the age groups 21–30 and 31–40, while there are no other differences. The standing time of new drug users was longer than that of traditional users ($p < 0.05$), especially with significant differences in the latter ($p < 0.01$), while there was no difference in mixed users.

Reaction time testing

Table 8
Reaction time testing for female abstainers

Age (year)	Anesthetic drugs (s)	Psychotropic drugs (s)	Mixed drugs (s)
10–20	0.93 ± 0.34	0.68 ± 0.19$^{\#}$	0.71 ± 0.23
21–30	0.88 ± 0.71	0.71 ± 0.31$^{\#\#\ @}$	0.81 ± 0.32
31–40	0.81 ± 0.30	0.71 ± 0.23$^{\#\#}$	0.75 ± 0.25*
41–50	0.85 ± 0.38	0.76 ± 0.26$^{\#\#}$	0.81 ± 0.34
51–60	0.88 ± 0.27	0.74 ± 0.13$^{\#\#}$	0.77 ± 0.17
(Note: Traditional and new are represented by #, traditional and mixed *, new and mixed @; $p < 0.05$: #, *, @, $p < 0.01$: # #, *, @)			

According to their reaction rate, the rate of reaction from fast to slow is: those who use Psychotropic drugs are significantly faster than those who use Anesthetic drugs ($p < 0.01$, occasionally $p < 0.05$), while those who use mixed drugs are between the two, with no significant difference.

(1) In the age range of 21–30 years; The response of new drug user was faster than that of mixed drug user ($p < 0.05$).

(2) In the age group of 31 to 40 years old, mixed drug user responded faster than those who smoked traditional cigarettes ($p < 0.05$).See Table 8.

Discussion

From the above, it can be seen that: (1) Traditional drug users have better dynamic balance abilities than new drug users, while mixed drug users are in between the two. Although the results may vary across different age groups, the overall situation remains the same; (2) In terms of static balance ability, those who use Psychotropic drugs are better than those who use Anesthetic drugs, and there is no difference in mixed users; (3) In terms of reaction speed, those who use Psychotropic drugs have the fastest reaction speed, followed by those who use mixed drugs, and those who use Anesthetic drugs have the worst reaction speed.

Through reviewing relevant data, it was found that Anesthetic drugs, mainly heroin, mainly oxidize and damage the nucleus accumbens, dorsal central gray matter, caudate nucleus, amygdala, nucleus accumbens, hippocampus, and frontal cortex when attacking neurons in the human body; Methamphetamine mainly oxidizes and damages the striatum [9]. And we also found that the striatum is related to the stability of casual movement, the maintenance of muscle tone, and the regulation of limb posture. In addition, it is also related to the processing of information transmitted by proprioceptors, that

is, unconscious motor reflex control. According to clinical and pathological observations, invasion of different parts of the striatum can result in changes in muscle tone and a series of involuntary movements. The change in muscle tone can be an increase or decrease in muscle tone, or an increase or decrease in variability. Uncontrolled movements can include dance like movements, hand and foot movements, abnormal muscle tone, or tremors. The characteristic of this type of involuntary movement is that it disappears during sleep and becomes apparent during emotional arousal. People classify the above symptoms into two major categories in clinical practice: one type mainly manifests as decreased movement and increased muscle tone, such as Parkinson's disease; Another type mainly manifests as low muscle tone and excessive exercise, such as chorea or athetosis; It can be inferred that the new drug has caused significant damage to the structure of the new striatum, resulting in deficiencies in the body's dynamic control ability. Li Jianhong et al. used the SNP method to analyze the Kappa opioid (OPRK1) receptors in large white, landrace, and Duroc pigs, and the results showed that the Kappa opioid receptor gene SNP had a certain impact on the resting and standing behavior traits of sows [18]. Studies have reported that the analgesic effect of the Kappa opioid receptor gene knockout mice on agonists disappears, and the effects of reduced exercise and restlessness are also significantly reduced [19]. There are also literature showing that compared to heroin addiction, the methylation of the OPRK1 promoter in methamphetamine addicts is significantly increased [20]. Methamphetamine may significantly reduce the body's dynamic control ability by increasing the expression of OPRK1. Therefore, the dynamic balance ability of new drug user is inferior to that of traditional drug user. And because both have contact, the mixed inhaler is in between.

For static balance ability: Some studies have found that spongiform white matter disease caused by long-term heroin use can cause static tremors in drug user [21]. The reason is that heroin can cause damage to the old striatal structure (globus pallidus) of the striatum, mainly manifested as shrinking [22], and damage to the old striatum can also lead to tremor paralysis; Dancing disease caused by damage to the striatum can be alleviated during quiet times; Therefore, new drug users have a relative advantage in static balance. Moreover, through literature review, it was found that the brain structures of methamphetamine addicts were damaged, including severe damage to the cingulate and marginal gray matter, decreased hippocampal volume, white matter hypertrophy, medial temporal lobe injury, and increased striatum. These structural changes can be partially restored after one year of abstinence, but have not returned to normal levels [23.24.25], and some functions recover faster, such as dopamine signal recovery. Perhaps within a period of time after methamphetamine withdrawal, the nervous system or other systems that control static balance have already been restored. Therefore, we speculate that this is also one of the reasons why the static balance ability of new drug user is better than that of traditional drug user.

In some cases, it has been shown that long-term heroin use can affect the deep tendon reflex of the human body, which may be related to damage to the peripheral nervous system [26]. The tendon reflex activity can to some extent affect the agility of the human body. Long term use of heroin can cause heroin spongiform leukoencephalopathy, indicating that long-term use of heroin can lead to a decrease in the symmetrical distribution density of bilateral white matter areas, posterior limbs of the inner

capsule, and cerebellar dentate nucleus, resulting in some adverse consequences. For example, when onset occurs during drug withdrawal, clinical manifestations often include cerebellar symptoms, delayed response, decreased judgment, and emotional apathy; In addition, heroin can cause damage to the old striatal structure (globus pallidus) of the striatum, mainly manifested as shrinking [22], which can lead to delayed body movements. From the above, we speculate that it is precisely because the above pathological manifestations greatly damage the neural agility of drug user, leading to a decrease in reaction speed; Compared to the rapid recovery of new addicts after abstinence, traditional drug user are not the favored ones of fate. Because traditional drug users mainly consume heroin, we boldly speculate that this is greatly related to heroin spongiform leukoencephalopathy.

In addition, both responsiveness and static balance ability showed stable results; However, there are still a few special cases in terms of dynamic balance ability: (1) In the 10–50 age group, there will be mixed inhalers who are better than the above two, mainly concentrated in the Dom (1) and Non Dom (1) test actions, and in terms of age, they will decrease from 31 to 40 age groups to both sides; Research has shown that the static balance ability decreases with age, with a significant decrease between the ages of 35 and 44 [27]; Reminder: The age of 40 is likely to be a very important turning point. Based on the data results, it can be inferred that the effects of drugs on the human body before the age of 30 are very clear, which can reflect the varying degrees of harm caused by different drug use methods to the human body; In the age range of 31 to 40 years old, the influence of factors such as age maturity slightly reduces the difference in the toxic effects of drugs on the human body, thus blurring the degree of harm caused by different drug use methods to the body; Subsequently, the decline in balance ability slowed down relatively [28], indicating a decrease in the influence of age. (2) New drug user in the age range of 51 to 60 are better than mixed drug user, while traditional drug user are between the two; However, throughout this age group, there are only a few differences in motility, and some data shows that the older the age, the poorer the balance and stability ability [27]. Young people recover faster, while older people do the opposite, so the impact of drugs decreases; It can be inferred that the age factor has a significant impact on the 51 to 60 age group.

The amount of testing in this experiment is too large, so errors caused by other factors cannot be ruled out; This experiment is only a superficial test, so its specific impact mechanism needs further verification.

Conclusion

Psychotropic drugs will give priority to destroying the dynamic balance of the human body. Because mixed drugs are a combination of new and Anesthetic drugs, the damage to the dynamic balance of the human body is second only. The Anesthetic drugs have the priority to destroy the static balance of the human body. The reaction rate is the same as above, and the mixing is only second. However, its specific mechanism has yet to be further studied.

Declarations

Acknowledgments

We are grateful to the Rehabilitation and Addiction Treatment Center .

Statement

This manuscript only agrees to be published in this journal, there is no conflict.

Conflict of Interest

We declare that this work was conducted without any commercial or financial relationships that could be construed as a potential conflict of interest.

Author Contributions

Jing song Wang, Shen Wang conceived and designed the experiments. Jing song Wang experimental subjects, signed the informed consent process .

Ethics statement

The studies involving human participants were reviewed and approved by The Institutional Review Board at the Fujian Normal University. The patients/participants provided their written informed consent to participate in this study.

Funding

The authors declare that this study received funding from the National Social Science Foundation of China (Authorization Number:20BTY122). The funder was not involved in the study design, collection, analysis, interpretation of data, the writing of this article or the decision to submit it for publication.

Data Availability Statement

All datasets generated for this study are included in the article.

References

1. The UN publishes the «World Drug Report»In 2018.
2. Ji H, Liu G, Xu X, et al. Hypermethylation of the κ1 opioid receptor promoter in Chinese heroin and methamphetamine addicts[J]. Experimental and therapeutic medicine, 2018, 16(3): 2392.
3. Morley et al. 2017; United Nations Office on Drugs and Crime 2017.
4. Holtz NA，Lozama A，Prisinzano TE，et al． Reinstatement of methamphetamine seeking in male and female rats treated with modafinil and allopregnanoloneJ． Drug Alcohol Depend2012120(1-3) : 233-237.

5. Cosgrove KP,Carroll ME.Differential effects of bremazocine on oral phencyclidine(PCP) self□ administration in male and female rhesus monkeys□J□.Exp Clin Psychopharmacol,2004,12(2):111□ 117.
6. Zhou Y,Zhao M,Zhou C,et al. Sex differences in drug addiction and response to exercise intervention:From human to animalstudies□J□.Front Neuroendocrinol,2015,40(4):24□41.
7. Zhao Min. Drugs and Their Classification [J]. Health Weekly, 2007, (13)
8. Man Chunxia, Zou Wujie, Yang Shuping, et al. Research on the Control of Anesthetic and Psychotropic Drugs: The Process and Current Situation of Control of Anesthetic and Psychotropic Drugs in China [J]. China Pharmacy, 2017,28 (01): 18-22
9. Pi Mingshan, Wu Yuxiang, Ru Qin, Li Chaoying. Research progress on the damage of common drugs to brain neurons [J]. Wuhan Biomedical Research Institute, Jianghan University, 2014,9:65
10. Standing on one foot with closed eyes http://jck.39.net/jiancha/wuli/d979f.html
11. Gray GW. Lower Extremity Functional Profile. Adrian, MI: Wynn Mar- keting Inc; 1995.
12. Kinzey SJ, Armstrong CW. The reliability of the star-excursion test in assessing dynamic balance. J Orthop Sports Phys Ther. 1998;27:356–360.
13. Hertel J, Miller SJ, Denegar CR. Intratester and intertester reliability dur- ing the Star Excursion Balance Tests. J Sport Rehabil. 2000;9:104–116.
14. Sun Hongjun, Wei Jizu. Determination and analysis of the normal range of simple reaction time in normal adults [J]. Journal of Clinical Psychosomatic Diseases, 2006,12 (5): 358
15. Hertel, J, Braham, R, Hale, S and Olmsted-Kramer, L. Simplifying the star excursion balance test: analyses of subjects with and without chronic ankle instability. J Orthop Sports Phys Ther 36(3): 131-137, 2006.
16. Powden CJ, Dodds TK, Gabriel EH. THE RELIABILITY OF THE STAR EXCURSION BALANCE TEST AND LOWER QUARTER Y-BALANCE TEST IN HEALTHY ADULTS: A SYSTEMATIC REVIEW. Int J Sports Phys Ther. 2019 Sep;14(5):683-694. PMID: 31598406; PMCID: PMC6769278.
17. Robinson, RH and Gribble, PA.Support for a Reduction in the Number of Trials Needed for the Star Excursion Balance Test. Arch Phys Med and Rehabil 89(2): 364-370, 2008a.
18. Li J H□Cui W G□Wang Y□Bao J□ Single nucleotide polymorphism in exon partial sequence of sow kappa opioid receptor gene□ Acta Genetica Sinica□2004□31(12) : 1369-1374□
19. Donaldson Z R□Young L J□ Oxytocin□vasopressin□and the neurogenetics of sociality□ Science□ 2008□322(2903) : 900-904□
20. Hypermethylation of the κ1 opioid receptor promoter in Chinese heroin and methamphetamine addicts
21. Yin R, Lu C, Chen Q, et al. Microvascular damage is involved in the pathogenesis of heroin induced spongiform leukoencephalopathy[J]. International journal of medical sciences, 2013, 10(3): 299.
22. Müller U J, Mawrin C, Frodl T, et al. Reduced volumes of the external and internal globus pallidus in male heroin addicts: a postmortem study[J]. European archives of psychiatry and clinical

neuroscience, 2018: 1-8.

23. Chang L，Cloak C，Patterson K，et al． Enlarged striatum in abstinent methamphetamine abusers: a possible compensatoryresponse．J．Biol Psychiatry，2005，57(9) : 967，974.
24. Thompson PM， Hayashi KM， Simon SL， et al． Structural abnormalities in the brains of human subjects who usemethamphetamine．J．． J Neurosci，2004，24(26) : 6028 ， 6036
25. Morales AM，Lee B，Hellemann G，et al． Gray ， matter volume in methamphetamine dependence: Cigarette smoking and changes with abstinence from methamphetamine．J，.Drug Alcohol Depend，2012，，Epub ahead of print．
26. Chui DH, Tabira T, Izumi S, Koya G, Ogata J. Decreased β-Amylioid and Increased Abnormal Tau Deposition in the Brain of Aged Patients with Leprosy. Am J Pathol, 1994; 145(4):771-775.
27. Analysis of the Aging Changing Characteristics and Influencing Factors of the Balance Ability of Chinese Residents - Taking Shanxi Province as an Example
28. Huang Yong. Analysis of Differences in Standing Balance Ability between Healthy Men and Women of Different Age Groups [D] Hefei: Anhui Medical University, 2011