

ARTICLE

# Association between Meeting 24-Hour Movement Guidelines and Psychological Features of Chinese Emerging Adults

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## ABSTRACT

**Background:** Emerging adulthood is a pivotal life stage, presenting significant psychological and social changes, such as decreased sociability, depression, and other mental health problems. Previous studies have associated these changes with an unhealthy lifestyle. The 24-h movement guidelines for healthy lifestyles have been developed to promote appropriate health behaviors and improve individual wellness. However, the relationship between adherence to the 24-h movement guidelines and different characteristics of Chinese emerging adults is yet to be explored. This cross-sectional study aimed to investigate the association between adherence to the 24-h movement guidelines and four characteristics (self-exploration, instability, possibilities, and responsibility) of Chinese emerging adults. **Methods:** Overall, 1,510 Chinese emerging adults aged 18–29 years were included in this study. Each participant completed a self-administered questionnaire that included questions on adherence to the 24-h movement guidelines (physical activity, sedentary behavior, and sleep) and the inventory of dimensions of emerging adulthood. Multivariable logistic regression analysis was employed to investigate the associations between adherence to the 24-h movement guidelines and each of the four characteristics. **Results:** The proportion of participants who adhered to the 24-h movement guidelines was 31.72%. Multiple regression analysis revealed a significantly negative relationship between adhering to more guidelines and instability ( $\beta = -0.51$ ,  $p < 0.001$ ). A statistically significant association was observed between instability and meeting only sedentary behavior ( $\beta = -1.27$ , 95% confidence interval [CI]:  $[-2.32, -0.24]$ ,  $p = 0.02$ ), sedentary behavior + sleep ( $\beta = -1.30$ , 95% CI:  $[-2.24, -0.35]$ ,  $p < 0.01$ ), and physical activity + sedentary behavior ( $\beta = -1.08$ , 95% CI:  $[1.94, -0.21]$ ,  $p = 0.02$ ) guidelines. Further, positive and significant associations were observed between possibilities and meeting the guidelines for only physical activity ( $\beta = 0.70$ , 95% CI:  $[0.14, 1.27]$ ,  $p = 0.01$ ), only sleep ( $\beta = 0.61$ , 95% CI:  $[0.01, 1.21]$ ,  $p = 0.04$ ), physical activity + sedentary behavior ( $\beta = 0.56$ , 95% CI:  $[0.04, 1.07]$ ,  $p = 0.01$ ), and physical activity + sleep ( $\beta = 0.76$ , 95% CI:  $[0.23, 1.27]$ ,  $p = 0.01$ ). **Conclusions:** These findings suggest that adherence to the 24-h movement guidelines was associated with instability in Chinese emerging adults. Future studies are warranted to verify our findings to highlight the importance of maintaining a health lifestyle to promote health in emerging adulthood.

## KEYWORDS

24-h movement behavior; physical activity; sedentary behavior; sleep; psychological health; emerging adults



## Introduction

Emerging adulthood is a special, multifaceted, and dynamic period of development that spans from late adolescence to the initial stages of adulthood [1,2]. Emerging adults navigate a landscape characterized by heightened autonomy, an array of diverse opportunities, and a simultaneous grappling with uncertainties and responsibilities [3]. During the developmental process of emerging adulthood, individuals experience diverse changes in the physical, psychological, behavioral, employment, and romantic relationship domains [4,5]. This new life period often presents challenges, such as decreased sociability, psychological distress, and anxiety disorders, that can detrimentally affect mental health [6]. An epidemiological review found that more than 40% of individuals aged 18–29 years experienced at least one psychiatric disorder in a 12-month period. This prevalence, especially for mood and anxiety disorders, is significantly higher than that in other age groups [7]. Similarly, another study reported that approximately 30% of emerging adults had depressive symptoms, of which 13.2% had major depressive episodes [8]. Such psychopathological issues during emerging adulthood hinder adaptation and a successful transition to adulthood.

A previous study suggested that the elevated prevalence of mental problems implies a correlation between the features of emerging adulthood and an increased susceptibility to mental disorders [9]. Based on the American cultural context, Arnett et al. [6] proposed five distinct characteristics of emerging adulthood including identity explorations, instability, self-focus, feeling in-between, and optimism/possibilities. However, cultural nuances have led to the development of different dimensions. The inventory of dimensions of emerging adulthood-Chinese version (IDEA-C) was developed previously and consists of four features including self-exploration, instability, possibilities, and responsibility [2]. Self-exploration is an important aspect of emerging adulthood, as individuals seek to understand themselves and their place in the world. With explorations and experience of internal struggles to establish their identity, emerging adults may exhibit significant challenges that influence their psychophysiological well-being [10]. For example, in coping with identity exploration, emerging adults often report increased tendencies toward ruminative exploration and depressive symptoms [11], alongside decreased experiences of fun, satisfaction, and excitement [12]. Instability refers to the uncertainty and changes that occur during this period, such as changes in relationships, education, and employment. All these uncertain life circumstances may create challenges and instability, subsequently leading to the development of several unstable mental problems (e.g., depression and stress) [10]. Possibilities refer to the opportunities and potential, such as exploring new interests and experiences, that arise during emerging adulthood. Despite facing difficulties, challenges, and contradictions, the majority of emerging adults maintain an unwavering belief in the promising prospects of their future [13], leading to

increased self-esteem and decreased levels of social anxiety levels [14]. Responsibility refers to the development of personal and social responsibilities, such as self-care and social contribution [2,6]. Accepting responsibility is associated with perceived emotional well-being and life satisfaction in emerging adults [15]. Therefore, positively improving the characteristics of these adults is very important to promote their physical and mental health.

Early adulthood serves as a crucial transition, significantly influencing the establishment and adoption of health-promoting behaviors and features of emerging adulthood that persist throughout an individual's life [16]. Previous studies have highlighted independent associations between regular physical activity (PA), sedentary behavior, sleep patterns, and psychological health [17–21]. For example, a prospective study on emerging adults shows that engaging in daily PA can significantly improve an individual's satisfaction with life [22] and reduce depressive symptoms [23]. Reduced sedentary time or sufficient sleep in emerging adults has been linked to decreased anxiety and depression levels [24,25]. To encourage healthy lifestyles in the whole population, the Chinese government developed the 24-h movement guidelines that advocate for daily PA, balanced sedentary behavior, and adequate sleep [26]. Although several studies have investigated how adherence to these guidelines impacts physical and psychological health outcomes in children and adolescents [27–30], a knowledge gap regarding these associations among emerging adults in China still exists. Therefore, the present study aimed to understand the relationship between adherence to the 24-h movement guidelines and four distinct psychological features—self-exploration, instability, possibilities, and responsibility—among Chinese emerging adults.

## Methods

### *Study design and participants*

This study employed a cross-sectional online design. The participants were conveniently sampled and recruited through advertisements and social media. The voluntarily completed an internet-based survey on the Questionnaire Star Platform from August to September 2022. Each participant's IP address could only be used once to fill out the questionnaire. The inclusion criteria were as follows: (1) age between 18 and 29 years; (2) absence of major physical or psychological illnesses; and (3) completion of a self-administered questionnaire that included questions on adherence to the 24-h movement guidelines (PA, sedentary behavior, and sleep) and the IDEA-C. The exclusion criteria were: age under 18 years or over 29 years; individuals with a history of drug addiction; incomplete data. A total of 1510 Chinese emerging adults aged 18–29 years provided complete responses. All participants signed a written informed consent form before enrollment in the study. Ethics approval was obtained from the Shenzhen University Human Research Ethics Board (No. PN-2021-048). All participants provided written informed consent.

## Measures

### Guidelines

The Chinese version of the International Physical Activity Questionnaire-Short Form was utilized to evaluate self-reported PA levels and sedentary behavior during the past 7 days [31]. Metabolic equivalents (METs) were used to classify the PA level. The METs for each PA level were consistent with previous studies, such as light PA (walking) = 3.3 METs, moderate PA = 4.0 METs, and vigorous PA = 8.0 METs. The total PA amount for each participant was calculated by summing up: walking minutes  $\times$  walking days  $\times$  3.3 METs + moderate PA minutes  $\times$  moderate PA days  $\times$  4.0 METs + vigorous PA minutes  $\times$  vigorous PA days  $\times$  8.0 METs per week. The time spent engaging in moderate and vigorous PA was employed to calculate the moderate-to-vigorous PA (MVPA) level. Sedentary behavior was measured using the question: "In the past 7 days, how much time did you spend sitting on a week day?" Responses to sitting for less than 8 h a day indicated that the adults adhered to the sedentary behavior guideline. Sleep duration was measured using the following single question from the Pittsburgh Sleep Quality Index: "In the past month, how many hours of actual sleep did you have at night?" Responses ranging from 7 to 9 h/day indicated compliance with the sleep duration guideline.

### Dependent Variables

#### Four features

The degree of identification with emerging adulthood features was assessed using the IDEA-C [2]. The IDEA-C has been shown to be effective in measuring the psychological characteristics of Chinese emerging adults. Compared with the original version of the IDEA developed by Reifman et al., which comprised 20 items with five features. The items in IDEA-C are narrowed down to four features (self-exploration, instability, possibilities, and responsibility). The responses to the IDEA-C items were designed on a four-point Likert scale ranging from 1 = "totally disagree" to 4 = "totally agree". Higher scores in each subscale indicated greater agreement with the feature.

#### Covariates

Participants' demographics encompassing age, gender (men and women), ethnicity (Han and minorities), education level (no schooling, primary school, second school, high school, undergraduate/college, and postgraduate or higher), living situation (living alone, living with classmates, sharing a house with others, living with parents or partner, etc.), and body mass index (BMI). Detailed demographic data is shown in Table 1.

#### Statistical analysis

Descriptive statistics were calculated for all the variables. Continuous variables are described using means and standard deviations, and categorical variables are described using unweighted sample counts and percentages. Multiple linear regression analysis was used to estimate odds ratios

TABLE 1

Participant characteristics	
Emerging adults ( <i>n</i> = 1510)	
Characteristics	Value <sup>1</sup>
<b>Age (M, SD)</b>	20.08 (3.36)
<b>Gender (n, %)</b>	
Male	700 (46.36)
Female	810 (53.64)
<b>Marital status (n, %)</b>	
Single	1412 (93.51)
Married	98 (6.49)
<b>Number of children (n, %)</b>	
0	1488 (95.89)
1	40 (2.65)
2	19 (1.26)
3	3 (0.20)
<b>Living status (n, %)</b>	
Live alone	119 (7.88)
Live with other people	1042 (69.01)
Live with your family	349 (23.11)
<b>Monthly income level (n, %)</b>	
<2000	1219 (80.73)
2000<--<5000	161 (10.66)
5000≤--<10000	78 (5.17)
10000≤--<50000	44 (2.91)
50000≤--<100000	3 (0.20)
≥100000	5 (0.33)
<b>Highest education level (n, %)</b>	
Less than high school	3 (0.20)
High school	120 (7.94)
Some college or associated degree	1275 (84.44)
College degree or higher	112 (7.42)
<b>Four features of emerging adults</b>	
Self-exploration	25.10 (7.28)
Instability	14.03 (4.40)
Possibilities	9.61 (2.85)
Responsibility	9.68 (3.28)

Note: Values are mean (SD) or *n* (%). *N* (%) represents sample counts.

with 95% confidence intervals (CIs) in the association between adherence to the 24-h movement guidelines and the four features (self-exploration, instability, possibilities, and responsibility). Separate analyses were performed for all three components of the 24-h movement guidelines and specific combinations (PA, sleep, sedentary behavior, sedentary behavior + sleep, sedentary behavior + PA, sleep + PA, and PA + sedentary behavior + sleep) as independent variables in the models. Socio-demographic data (age, gender, marital status, number of children, living, income level, and highest education level of emerging adults) were included as potential confounders. Data analysis was conducted using

TABLE 2

## Descriptive statistics of adherence to the 24-h movement guidelines

Compliance with the 24-h movement guidelines (n, %)	
Not meeting recommendations	67 (4.44)
Sedentary behavior recommendations	
Meeting	987 (65.36)
Not meeting	523 (34.64)
Sleep recommendations	
Meeting	931 (61.66)
Not meeting	579 (38.34)
Physical activity recommendations	
Meeting	1125 (74.50)
Not meeting	385 (25.50)
Meeting at least one recommendations	322 (21.32)
Sedentary behavior + sleep recommendations	
Meeting	617 (40.86)
Not meeting	893 (59.14)
Physical activity + sedentary behavior recommendations	
Meeting	765 (50.66)
Not meeting	745 (49.34)
Physical activity + sleep recommendations	
Meeting	697 (46.16)
Not meeting	813 (53.84)
Meeting at least two recommendations	642 (42.52)
Meeting three recommendations	479 (31.72)

Stata 15.0, and the statistical significance level was set at  $p < 0.05$ .

## Results

### Sample characteristics

Data on 1,510 Chinese emerging adults aged 18–29 years were included in this study. The mean age of the participants was

$20.08 \pm 3.36$  years, and the majority were single (93.51%). Approximately 96% reported having no children. Of the participants, 69.01% lived with others, 23.11% lived with their family and 7.88% lived alone. The majority (80.73%) reported an income of less than ¥2000, while only a small proportion earned ¥2000–¥5000 (10.66%). Only a negligible percentage of emerging adults (0.20%) responded that they had not completed high school (see Table 1).

### Adherence to the 24-h movement guidelines

Table 2 and Fig. 1 present the estimated percentages of adherence to the 24-h movement guidelines among Chinese emerging adults. In total, 65.36% ( $n = 987$ ) of the participants met the sedentary behavior recommendation, 61.66% ( $n = 931$ ) met the sleep duration recommendation, and 74.50% ( $n = 1,125$ ) met the PA recommendation. A third of the participants ( $n = 479$ , 31.72%) adhered to all three guidelines, while a small proportion ( $n = 67$ , 4.44%) did not adhere to any of the guidelines. Among those who followed two of the three recommendations ( $n = 642$ , 42.52%), most complied with the sedentary behavior and PA recommendations.

### Associations between meeting the 24-h movement guidelines and the four features

The associations between meeting the 24-h movement guidelines and the four features of emerging adulthood are presented in Table 3. The multiple regression analysis results revealed a significant negative relationship between meeting more guidelines and instability ( $\beta = -0.51$ , 95% CI  $[-0.71, -0.31]$ ,  $p < 0.001$ ). Meeting one or more guidelines compared with meeting no guideline was significantly associated with lower levels of instability ( $\beta = -0.91$ , 95% CI  $[-1.76, -0.06]$ ,  $p = 0.04$ ;  $\beta = -1.05$ , 95% CI  $[-1.87, -0.23]$ ,  $p < 0.01$ ;  $\beta = -1.80$ , 95% CI  $[-2.64, -0.97]$ ,  $p < 0.001$ ). Additionally, meeting the sedentary behavior ( $\beta = -1.27$ , 95% CI  $[-2.32, -0.24]$ ,  $p = 0.02$ ;  $p < 0.01$ ), sedentary behavior + sleep ( $\beta = -1.30$ , 95% CI  $[-2.24, -0.35]$ ,  $p < 0.01$ ), PA + sedentary behavior ( $\beta = -1.08$ , 95% CI  $[-1.94, -0.21]$ ,  $p = 0.02$ ), or PA + sedentary + sleep ( $\beta = -1.79$ , 95% CI  $[-2.63, -0.96]$ ,  $p < 0.001$ ) guidelines compared with meeting no guideline had negative and significant associations with instability.

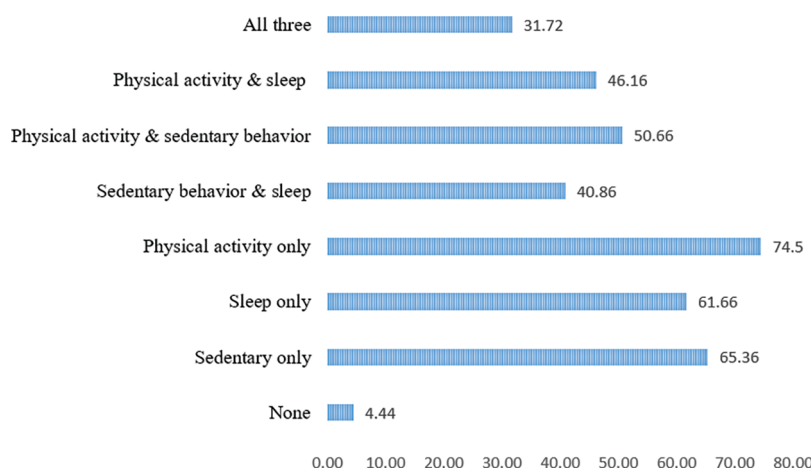


FIGURE 1. Proportion of emerging adults meeting different combinations of movement behavior recommendations. Data are presented as percentages.  $N = 1510$ .

TABLE 3

Associations between meeting the 24-h movement guidelines and the four features

	Self-exploration		Instability		Possibilities		Responsibility	
	$\beta$ (95% CI)	<i>p</i>	$\beta$ (95% CI)	<i>p</i>	$\beta$ (95% CI)	<i>p</i>	$\beta$ (95% CI)	<i>p</i>
Number of guidelines meet								
None	Reference		Reference		Reference		Reference	
One of three	0.74 (−0.54, 2.03)	0.26	−0.91 (−1.76, −0.06)	0.04	0.51 (−0.004, 1.02)	0.052	0.20 (−0.50, 0.89)	0.58
Two of three	0.90 (−0.33, 2.13)	0.15	−1.05 (−1.87, −0.23)	0.01	0.58 (0.09, 1.07)	0.02	0.48 (−0.18, 1.15)	0.16
All three	0.51 (−0.75, 1.77)	0.43	−1.80 (−2.64, −0.97)	<0.001	0.49 (−0.01, 0.99)	0.055	0.28 (−0.41, 0.96)	0.43
Trend analysis	−0.01 (−0.31, 0.29)	0.96	−0.51 (−0.71, −0.31)	<0.001	0.06 (−0.06, 0.18)	0.35	0.06 (−0.10, 0.22)	0.47
Specific combinations of guidelines meet								
None	Reference		Reference		Reference		Reference	
Sedentary only	0.07 (−1.50, 1.63)	0.93	−1.27 (−2.32, −0.24)	0.02	0.08 (−0.54, 0.70)	0.80	0.33 (−0.52, 1.18)	0.45
Sleep only	0.50 (−1.02, 2.03)	0.52	−0.76 (−1.78, 0.25)	0.14	0.61 (0.01, 1.21)	0.04	0.12 (−0.71, 0.95)	0.77
Physical activity only	1.33 (−0.09, 2.74)	0.07	−0.78 (−1.72, 0.17)	0.11	0.70 (0.14, 1.27)	0.01	0.16 (−0.61, 0.93)	0.68
Sedentary + sleep	0.55 (−0.87, 1.98)	0.45	−1.30 (−2.24, −0.35)	<0.01	0.39 (−0.17, 0.95)	0.18	0.39 (−0.39, 1.16)	0.33
Physical activity + sedentary	0.82 (−0.48, 2.12)	0.22	−1.08 (−1.94, −0.21)	0.02	0.56 (0.04, 1.07)	0.03	0.63 (−0.08, 1.33)	0.08
Physical activity + sleep	1.26 (−0.08, 2.61)	0.07	−0.84 (−1.73, 0.06)	0.07	0.76 (0.23, 1.29)	<0.01	0.36 (−0.37, 1.08)	0.34
All three	0.53 (−0.73, 1.79)	0.41	−1.79 (−2.63, −0.96)	<0.001	0.50 (−0.001, 1.00)	0.05	0.28 (−0.41, 0.96)	0.43

Regarding possibilities, no significant association was observed with the number of guidelines met ( $\beta = 0.06$ ,  $p = 0.35$ ). However, the results revealed a positive and significant association with meeting only the PA ( $\beta = 0.70$ , 95% CI [0.14, 1.27],  $p = 0.01$ ), only the sleep ( $\beta = 0.61$ , 95% CI [0.01, 1.21],  $p = 0.04$ ), PA + sedentary behavior ( $\beta = 0.56$ , 95% CI [0.04, 1.07],  $p = 0.01$ ), and PA + sleep ( $\beta = 0.76$ , 95% CI [0.23, 1.27],  $p = 0.01$ ) guidelines. Additionally, meeting all the three guidelines compared with meeting no guideline was marginally associated with a higher level of possibilities ( $\beta = 0.50$ , 95% CI [−0.001, 1.00],  $p = 0.05$ ).

Regarding self-exploration and responsibility, multiple regression analysis results revealed no significant associations with the number of guidelines met.

## Discussion

This cross-sectional study aimed to examine the associations between meeting the 24-h movement guidelines and four features of emerging adulthood (self-exploration, instability, possibilities, and responsibility) in Chinese emerging adults. The findings generally showed that one-third of emerging adults adhered to all the three 24-h movement guidelines, and positive links were observed between meeting one or more of the 24-h movement guidelines and some of the features of emerging adults. Specifically, meeting all three 24-h movement guidelines was significantly associated with instability in Chinese emerging adulthood. Meeting only the sedentary behavior, sedentary behavior + sleep, or PA + sedentary behavior guidelines compared with meeting no guideline exhibited negative and significant associations with instability. Meeting the guidelines for only PA, only sleep, PA + sedentary behavior, or PA + sleep compared with

meeting no guideline exhibited positive and significant associations with possibilities.

The findings of the present study showed that 31.72% of Chinese emerging adults adhered to the 24-h movement guidelines. Our finding is consistent with a previous study reporting that 27% of Chinese college students met the 24-h movement guidelines [32]. The prevalence of meeting the 24-h movement guidelines in our study was also higher than that of college students in the United States (22.1%) [33] and Canada (10.9%) [28]. These variations may be attributed to the different periods of data collection and sample characteristics. For example, Frederick et al. [33] recruited a sample aged 18–25 years compared with 18–29 years in our study. Moreover, Frederick et al.'s study employed aerobic and resistance training as criteria to assess compliance with the 24-h movement guidelines among students. Given the limited adherence to strength exercises (twice a week) [33], the proportion of individuals meeting the 24-h movement guidelines may have been less, which could account for the disparities observed in the findings.

An adulthood is structured as enduring commitments in romantic relationships, living conditions, friendships, and employment, whereas emerging adulthood is characterized by substantial instability as most young adults are yet to establish a stable foundation, navigating through a series of romantic relationships, living conditions, friendship, and frequent changes in jobs before making long-term decisions [6]. For example, friends are considered pivotal in the social lives of emerging adults, serving as trusted confidants, valuable advisors, and active sports partners [5]. In our study, most of the participants were college students who often received instrumental support from their friends, such as facilitating relocations or providing academic assistance in life. Previous studies have reported a negative association



between instability (e.g., social support from friends) and PA engagement [34], adequate sleep time [35], and limited sedentary behavior [36] among college students. Consistent with the aforementioned results, we found that the increased number of the 24-h movement guidelines met by the study participants was significantly associated with a lower level of instability in Chinese emerging adults. Specifically, the finding suggests that meeting all the three movement guidelines compared with meeting none of the recommendations was significantly associated with reduced instability. The underlying mechanism may be that the 24-h movement behaviors have biological effects on cortisol secretion and the autonomic nervous system [37]. These biological systems are closely associated with instability. In particular, the stress experienced by emerging adults due to pressure from increasing social competition can induce the release of cortisol, a hormone that plays a critical role in the body's stress response. When stress activates the hypothalamic-pituitary-adrenal axis, cortisol is released into the bloodstream. This hormone then interacts with receptors in various tissues, including the central nervous system and triggers instability (e.g., depression) [37]. Engaging in regular PA has been associated with a reduction in cortisol levels, attributed to the body's adaptation to stressors [37]. A previous study has indicated that sleep disruption can induce the release of cortisol in adults. Adequate sleep is crucial for maintaining a healthy cortisol rhythm, and PA has been linked to improved sleep patterns [38]. Therefore, meeting the 24-h movement guidelines appears to offer potential benefits in mitigating instability in emerging adults.

Regarding possibilities, although emerging adulthood is often a period of confusion and complex emotions, most emerging adults are hopeful and optimistic about their future [39]. Previous research has suggested a positive relationship between possibilities/optimism and participation in PA among adults [19]. As an extension of previous results, our study findings suggested that meeting PA or sleep, or PA + sleep guidelines was significantly associated with greater possibilities in emerging adults. For example, Kavussanu et al. found that individuals who were engaged in a higher amount of PA had greater optimism [40]. Hernandez et al. suggested that adequate sleep was significantly associated with higher levels of optimism [41]. These findings imply that meeting PA and sleep guidelines are the most important components for identifying possibilities or maintaining optimism [42,43]. Among people with negative emotions, PA can also promote optimism over time [44]. The possibility that PA and adequate sleep might produce significant positive effects on self-efficacy, which is positively associated with possibilities/optimism, is high. In contrast, individuals with possibilities/optimism are more likely to participate in health-promoting activities (e.g., PA) to combat stress and enhance immune response [42,45]. However, a marginal association was observed between meeting the 24-h movement guidelines and possibilities. Future studies are needed to further understand these findings.

The present study contributes to our understanding of the nuanced associations between adherence to the 24-h movement

guidelines and specific features of Chinese emerging adults. The results underscore the importance of considering various combinations of movement behaviors in relation to psychological features, providing valuable insights for public health interventions targeting this population. Although the present study depicts the novel and significant association between the 24-h movement guidelines and specific features of emerging adulthood, some limitations should be acknowledged. First, the cause-and-effect between the 24-h movement guidelines and specific features of emerging adulthood could not be established due to the cross-sectional design used in this study. Longitudinal studies are needed to examine the adherence to the 24-h movement guidelines and specific features of emerging adulthood. Second, the data were collected using self-reported questionnaires during the coronavirus disease 2019 pandemic, which may affect the accuracy of the results. Future research should use electronic devices (e.g., accelerometers) as a fundamental objective measure of movement behaviors to improve the accuracy of the data. Third, the study population primarily comprised Chinese individuals, which poses challenges in generalizing the present findings to other populations. Furthermore, due to a lack of prior published studies on adherence to the 24-h movement guidelines and specific features in emerging adulthood, direct comparisons with other research findings were difficult.

## Conclusion

The present study is the first study to explore the association between adherence to the 24-h movement guidelines and specific features of Chinese emerging adults. We found that Chinese emerging adults who adhered to more components of the 24-h movement guidelines had significantly lower levels of instability. However, future studies are warranted to verify our findings to highlight the importance of maintaining a healthy lifestyle in promoting the health of emerging adults.

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**Author Contributions:** Y.Z., J.K., X.L.L.—Conceptualization; methodology; formal analysis; J.K. and X.L. collected data, Y.Z., J.K., X.L., M.Z., and X.L.L. drafted the manuscript. All authors read and approved the final manuscript.

**Availability of Data and Materials:** The data for the present study is available from the corresponding author upon reasonable request.

**Ethics Approval:** Ethics approval was obtained from the Shenzhen University Human Research Ethics Board (No. PN-2021-048), and all participants provided written informed consent.

**Conflicts of Interest:** The authors report no financial or other relationship relevant to the present article.

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