UNIVERSITY OF CALIFORNIA
RIVERSIDE

Time-Use in Art and Athletics: American and Thai Young Adults

A Thesis Submitted in partial satisfaction
of the requirements for the degree of

Master of Arts

in

Sociology

by

Tyler Caleb Wilson Cohen

June 2022

Thesis Committee:
Dr. Robert Clark, Chairperson
Dr. Wei Zhao
Dr. Adalberto Aguirre

The Thesis of Tyler Caleb Wilson Cohen is approved:

_____

_____

_____
Committee Chairperson

University of California, Riverside

ABSTRACT OF THE THESIS

Time-Use in Art and Athletics: American and Thai Young Adults

by

Tyler Caleb Wilson Cohen

Master of Arts, Graduate Program in Sociology
University of California, Riverside, June 2022
Dr. Robert Clark, Chairperson

This study analyzes the relationship between time-use in artistic activities and time-use in athletic activities amongst a convenience sample of American and Thai young adults. Prior research has not paid attention to the possible relationship between engagement in art and in athletics. An original survey is used, sampling 507 young adults, ages 18-33, from the United States and Thailand. Linear regression with robust standard errors revealed a statistically significant but small positive relationship between time-use in art and in athletics. This supports the 'complimentary hypothesis' of engagement in art relating positively with engagement in athletics. This significant finding that time-use in art affects time-use in athletics draws attention to the need to further analyze the relationship between engagement in art and in athletics in order to design policies, organizations, and facilities that expand access to these low-carbon, health-benefitting, and community-building activities.

Table of Contents:

List of Tables:

List of Charts:

Introduction:

One of the most pressing issues facing people around the globe today is climate change and ecological breakdown that could threaten life as we know it. The world's leading climate scientists agree that society globally will need to adjust not only infrastructure, but habits that are the building blocks of our way of life in order to mitigate climate catastrophe effectively (Honeycutt 2013; Hawken, 2017; Graff Ziven and Neidell 2014). Solutions to global problems such as catastrophic climate change may be out of reach for ordinary people, and we cope with this by doing our best to transform our own individual lives (Bauman 2005). In Bauman's terms, ordinary people revert to the practice of *life-politics* to shape their own lives through consumption, lifestyle, migration, education and occupation (Bauman 2008). As people and social movements become further atomized and desperate in the face of immense global problems such as climate change, life-politics becomes an important piece of a complicated puzzle, namely, how to mitigate catastrophic climate change while also enabling widespread fulfillment, good health, and strong community bonds. Art and athletics, as forms of time-use that can help to lower emissions, benefit health, and foster interpersonal connections (Newman 2003), may relate in ways that offer clues for how to supplant consumerism with lifestyles centered around active engagement.

To gather data, an original survey has been deployed using snowball sampling stemming from the researcher's personal network in southern Thailand and western United States. Adults ages 18-33 years old in Thailand and the United States of America were eligible to participate in the study. To analyze the data, time-use in athletic activities

was selected as the dependent variable, and 12 independent variables, including time-use in artistic activities, were selected. Ordinary Least Squares (OLS) regression analysis revealed a weak but statistically significant relationship between time-use in art and time-use in athletics.

In paying attention to time-use, artistic activities, and athletic activities amongst Thai and American young adults, the findings of this study will help to fill gaps between several spheres of research. Three notable gaps that this study helps to fill are: 1.) Exploring the relationship between time-use in art with time-use in athletics. 2.) Considering how time-use in art and athletics changes based on an assortment of sociodemographic characteristics including age, nationality (US/TH), hours of paid work per week, urbanity, hours of unpaid care-work performed each week, and much more; and 3.) Considering art and athletics together through Zygmunt Bauman's theoretical lens of liquid modernity and life-politics. Thailand and America are selected strategically based on their unique vantage points within the globe in terms of climate change and the separation of power and politics, as well as being places where the researcher is a member of social groups and communities from previous work and study experience. Existing leisure time-use research focuses on wealthy, predominantly white countries (Glorieux et al. 2010; Iwasaki et al 2007; Sayer and Gornick 2009), and to the knowledge of the researcher, never considers the relationship between time-use in art and time-use in athletics or how this relationship may be affected by sociodemographic characteristics. Zygmunt Bauman (2005; 2008; 2019; 2021) writes about fitness as a strategy for making one’s corporeal form more consumable to friends, lovers, and employers, as well as art as

it relates to lifestyle, but his lens is yet to be applied to the relationship between art and athletics.

Three possible outcomes are considered. First, there is the null hypothesis that engagement in art and athletics are not related. This reflects the implicit logic responsible for the gap in literature being addressed by the present study, with art and athletics being studied separately but not in relation to each other (Lim et al. 2011; McManus and Furnham 2006). Second is the negative hypothesis which follows the logic of formal economics based on scarcity of resources; in this case, time. Especially because data was collected during a global pandemic when screen-use increased and other active leisure activities decreased (Liu et al. 2022), a negative relationship between time-use in art and time-use in athletics could reflect limited convenient options for young adults to participate in art or athletics, adding pressure to do one other the other, but not both. Lastly is the complimentary hypothesis that engagement in art and in athletics are related. Doing art may indeed increase engagement in athletics because art and athletics are active pursuits with similar benefits (Sayer 2009 Mazza 2012), and involve the practice of skills that rely on mind-body connections (Hutangura 2018; Scarinzi 2015). Additionally, skills tied to art and athletics are forms of cultural capital that may correlate with people who are more highly educated or of higher SES (Glorieux et al. 2010; Van Ingen and Van Eijck 2009; Veal 2016). Ultimately, the complimentary hypothesis is supported by the data collecteded by this study.

Despite their vast potential health, environmental, and sociocultural/ community-building benefits, art and athletics are two categories of time-use that, to the

knowledge of the researcher, have never been specifically studied in relation to each other. Existing research on time-use in athletics falls under the umbrella of the sociology of health, focusing on physical activity (Lee et al. 2018; Artemov 1981; Bird and Fremont 1991; Eime et al. 2015; Eime et al. 2017; Raskind et al. 2020). In the United States and Thailand, the age groups studied in regards to physical activity are often people of non-working age; either the elderly or children (Katewongsa et al 2021; Sayer 2009). Art and sports are both significant economically in America and Thailand (Sae-Lim et al. 2019; Mulaney-Loss 2020). Meanwhile, it is no secret that professional artists and their work have been studied extensively by art historians and that the field of art education furthers a wealth of knowledge about artistic techniques, similar to sports science generating knowledge about how athletes should train (Wohl 2021; Hutangura 2018; Gerber 2017; Zawadzki 2016). The proposed study takes a philosopher's 'step-back' and looks at every member of society around the globe as, to some degree, both an artist and an athlete. The unexplored links between art and athletics could inform teachers, administrators, and policy-makers hoping to transform lifestyles of passive consumption to become more sustainable, healthy, and interconnecting (Bregman 2017). The statistically significant relationship between art and athletics found by this study suggests that increasing engagement in art may be a method for increasing time-use in athletics.

Literature Review:

Studying time-use in art and athletics amongst young adults in America and Thailand involves a combination of topics with their own existing bodies of research. These paths of research include time-use research generally (Cornwell and Gershuny 2019; Gershuny 2018), studies of leisure, recreation, and the life course (Eime et al. 2015; Eime et al. 2017; Florindo et al. 2017; Ito et al. 2020), research on the culture and economies of the United States and Thailand (Manajit et al. 2020; Guillen-Royo 2013; World Bank 2021; CEIC 2021; Roof et al. 2007; Woolf and Schoomaker 2019), the sociology of sport (Guilianotti 2005), sociological research on professional artists (Gerber 2017; Wohl 2021), sociocultural meanings of art and athletics (McManus and Furnham 2006; Van Ingen and Van Eijck 2009), and work that reimagines society around the globe to require fewer carbon emissions (Aldana-Cohen et al. 2019; Bentley et al. 2020). Existing literature falling under these umbrellas will be discussed below as they serve the present research.

The present study joins a vibrant neighborhood of time-use research. Cornwell and Gershuny (2019) provide an extensive overview of existing time-use research. They highlight the field's key accomplishments such as tracking unpaid household work performed mostly by women, the evolution of British society's average daily routines, and how time-use changes throughout the life-course. While these are significant steps forward in understanding certain dimensions of time-use, the accomplishments of existing time-use research are only a drop in the bucket compared to the amount of curiosity in the subject and answerable questions that exist, including the research

questions of the present study. Much has been done in studying leisure time-use as a general category, often contrasted with working time, sleeping, self-maintenance, or unpaid work (Sayer and Gornick 2009; Sayer 2019; Wei et al. 2015; Smith et al. 2014; Raskind et al. 2020). The field of leisure studies goes into more detail about how certain cultures or demographics pursue leisure, although time-use considerations account for only a small portion of this broad field. The studies that address leisure time-use in a more nuanced manner than a general category or address art or athletics time-use specifically are few and far between, but what exists will be covered below, keeping in mind the gaps that the present study addresses.

Depending on whether or not respondents are compensated with money or academic credit for their time spent doing art or athletics, this time-use could be work or leisure (Frey et al. 2013). However, most existing time-use research that touches on art or athletics treats these categories of activity as falling under the umbrella of 'leisure' (Gershuny and Sullivan 2019). The original survey used by the present study revealed that individuals receiving academic or monetary compensation for their involvement in art or athletics were outliers due to exceptionally high amounts of time-use in these categories of activity. Rasmussen et al. (2018) gathered original data using accelerometers for their study of physical activity, comparing working time and leisure time. They found that men and women who spent more time walking or standing at work spent a lower proportion of their leisure time walking or standing. This suggests that people who have physically-demanding working lives will be less likely to participate in physically-demanding artistic and athletic activities in their free time, which informs the

competing hypothesis of a negative relationship between engagement in art and in athletics.

The many benefits of art and athletics are intertwined with the effortful nature of these sorts of activity (White and Hede 2008; Pan et al. 2009). Leading time-use researchers at the University of Maryland Time-Use Lab classified art and athletics under the category 'active leisure' which is to be compared with more passive leisure such as watching television, reading, or surfing the web (Sayer and Gornick 2009). In a study on the effects of the Covid-19 pandemic on leisure and the ability for leisure activities to reduce stress, Liu et al. (2021) note in their review of leisure studies literature that, "outdoor-activity/sport, social, and cultural-hobbies leisure activities were identified as the most significant leisure activities to reduce stress" (p. 4). Because Art and Athletics simultaneously require effort but also lift weight off of people's shoulders, the complimentary hypothesis becomes appealing. Art and athletics are fun ways to build healthy habits, and fun is a useful way to reinforce the habitual dimension of engagement in activities that are both physically active and creative (Nieri and Hughes 2016).

After the invention of the smartphone and especially amongst young adults, screen use towers above all other forms of leisure activity (Glorieux et al. 2010; Dąbrowski and Środa-Murawska 2022). Glorieux et al. 2010 also find that social class related to whether or not leisure time was spent outdoors or with friends, suggesting the importance of the present study's control variables such as paid work, household size, interet access, and other data collected by the original survey that will be utilized in future analysis taking a closer look at socioeconomics and art and athletics that will

further the ability for this research's findings to be utlized in the creation of policies, facilities, and programs that equitably expand access to art and athletics.

The present study is being pursued because of art and athletics' potential as sustainable, socially beneficial outlets of time-use to grow as a portion of the earth's population's use of time. Wei et al. (2015) studied leisure time, leisure activities, and happiness in China. They highlight that different leisure activity categories correlate with different levels of happiness, even when many other factors, such as age, do not. In southern Thailand, subjective wellbeing has been linked more strongly with basic needs than wealth (Guillen-Royo et al. 2013) Neither art or athletics requires a fortune to engage in, but having one's basic needs met are requisites, which contributes to the complimentary hypothesis because people doing art and athletics usually are not in desperate situations. Consumption is often fueled by promises of happiness (Bauman 2009), and art and athletics tend to deliver on such promises (Abbot et al. 2013; Bell and Robbins 2007; Keating et al. 2005).

Veal (2016) used time-use data from online databases to compare wealthy countries in terms of the particular leisure activities people engage in as compared to the level of income inequality within each country. Interestingly, Veal (2016) looks at both leisure time, cultural activity, and exercise/ recreation. The headline finding from Veal (2016) is that more egalitarian countries enjoy more leisure time on average, although they note that within countries, wealthier people report more working time and less leisure time. This supports Van Ingen and Van Eijck's (2009) finding that engagement in active leisure seems to demand a certain amount of cultural, social, and economic capital

and not simply free time. Veal (2016) sets the stage for the present study very interestingly because the United States features much higher levels of household consumption than in Thailand (NSO Thailand 2020) despite both countries facing high levels of inequality (Hewison 2014). Time-use in art and athletics requires basic needs to be met, benefits from cultural capital, but not necessarily a highly consumptive lifestyle after basic art or athletic supplies are obtained.

Artists and athletes are living organisms with basic needs, and both art and athletics are remarkable human expressions of being alive. One fascinating connection between art and athletics is the combination of thought and movement; mind and body (Scarinzi 2015). The Thai oil painter and philosopher, Paretas Hutangura (2018), writes about this connection, noting how artists' imaginations are ingrained in their movements and perceptions. Artists move their bodies in unique ways when making art similarly to how each person has their own way of walking, running, or eating. Indeed, the notion of an artists' touch is much like an athlete's touch; it is the embodiment of their practice and skills. Fiction writer Haruki Murakami (2007) details in his memoir how running gives him the space in his mind to be a highly productive writer and how the solitude and effort involved in his fiction writing keeps his mind quiet on runs, boosting his performance. The mind/body connection is one key way that art and athletics compliment one another, making it all the more interesting to know if the complimentary hypothesis is true.

Tükel and Temel's (2020) article on perceived freedom and happiness and active leisure amongst Turkish university students at Necmettin Erbakan University and Selçuk University is perhaps one of the closest neighbors to the present study due to similarities

in terms of subject, methods, and theoretical inspiration. They set out to examine possible relations between the leisure activities that university students participated in and their perceived freedom, life-satisfaction, and happiness. They find that those who participate in athletic activities during their leisure time are positively correlated with more perceived freedom (Tükel and Temel 2020). They also share theoretical influence with the present study, referencing Zygmunt Bauman's linkage between the cultural importance of leisure and leisure's growing economic significance in today's liquid modern world (Bauman 2005).

Eime et al. (2018) measures regional differences within an Australian state in terms of the relationship between sport participation and proximity to sport facilities. They find that in both rural and urban areas, people are more likely to be involved in particular sports if they live near facilities for those particular sports, and that this effect is strongest in urban regions of the Australian state studied. Similarly, Lim et al. (2011) find that regional and life-course (age) differences affect sport participation when noting that participation is higher in wealthier parts of wealthier countries. The present study controls for age and urbanity as independent variables.

McManus and Furnham (2006) study what influences people to become involved in art. Their study notes that particular kinds of music or painting may be associated with higher social class, but in their study, which sampled university students at University College London, no significant trends existed between sex, social class, and the kinds of aesthetic activities they participated in. Because McManus and Furnham (2006) samples university students, they are also studying young adults. The mean age of their

respondents was 21 years of age (McManus and Furnham 2006). The mean age of the young adults sampled in the present study is 22.23 years old. McManus and Furnham (2006) ask respondents about 17 distinct activities such as listening to popular music, reading a novel, playing a musical instrument, or going dancing. Many of these activities are relevant to the present study if respondents themselves list them, but it is important to note that McManus and Furnham include activities that go beyond actively creating art. It is possible that doing athletics relates with actively creating art, but not with the more passive sorts of potentially artistic activity such as listening to music or reading a novel, both of which did not count as artistic time-use in the present study even if respondents listed them.

Hypotheses

Three hypotheses were identified to explain the possible results of this research. First is is the null hypothesis: that respondents' time-use in art and athletics are unrelated to each other due to the basic nature of these two categories of activity being different and possibly appealing to different people with different lifestyles and life-situations. Second, is the competing hypothesis: that time-use in art takes up time that could be used doing athletics, thus lowering the expected hours per week respondents spend doing athletics. Thirdly, is the complimentary hypothesis: that time-use in artistic activities increases the expected time-use in athletic activities amongst young adults in America and Thailand. The control variables were selected in order to better hone in on variance of lifestyle and life-situation, as they relate to engagement in art and athletics (Bauman, 2008). For example, gender has been shown to be srongly related to differences in time-use in athletic activities (Bird and Fremont 1991; Katewongsa et al. 2020; Eime et al. 2015; Lee et al. 2018).

The null hypothesis incorporates elements of both the competing and complimentary hypotheses along with appealing to the qualitative differences between artistic and athletic activities. Entering this research project, questions such as, "why America and Thailand?" and "why art and athletics?" that the research proposal often prompted were rooted in the intuitive understanding that this research is comparing, according to popular common sense, completely separate categories of activity in two different countries with different cultures and economies. Previous research bridges cultures, using countries as proxies, to analyze leisure activities including physical

activity (Ito et al. 2020; Iwasaki et al. 2007). To the knowledge of the researcher, no literature exists that focuses on the relationship of art with athletics in terms of time-use, a gap which adds to the intuitiveness of the null (no relationship) hypothesis. Studies that focus on artists' lifestyles, life-paths, and what artists care about also do not include notes of a relationship with athletics (Gerber 2017; Wohl 2021; Daniel and Johnstone 2017).

The competing hypothesis leans on the assumption that time-use in anything other than athletics ultimately reduces the amount of time left for athletics. In their study of Thai youth, Katewongsa et al. (2020) found that physical activity was limited by the extensiveness of school curriculum and other pursuits of students, which conceivably includes artistic activities or art class. Understanding constraints on leisure activity is central to the study of leisure (Ito et al. 2020). With controls such as gender being considered, the competing hypothesis also coincides with evidence that males spend more time in athletics and females spend more time in art (Abbot et al. 2013). Time-use in athletics is already competing with housework, sleep, paid work, care work, and self-care activities, regardless of where in the globe one resides (Astbury et al 2020; Dunaway 2014).

The complimentary hypothesis is guided by literature that highlights stress-reducing tendencies of artistic and athletic activity (Bell and Robbins 2007; Liu et al. 2021). Additionally, engagement in activities that allow for personal creativity and being physically active are motivated by their being fun (Nieri and Hughes 2016). Because of the dominance of screen-use in young adults' leisure time-use, individuals who spend less time on screens might spend more time doing both art and athletics

(Dąbrowski and Środa-Murawska 2022; Liu et al. 2022). The complimentary hypothesis is also supported by work analyzing the mind-body connection as both art and athletics involve creativity and movement (Hutangura 2018; Scarinzi 2015). An especially intriguing dimension of the complimentary hypothesis is that self-efficacy and intention have been found to be strong correlates with increased amounts of physical activity (Pan et al. 2009). Possible connections between art and athletics may parallel fractal-shaped patterns that are already known to connect innumerable aspects of nature, society, and life (Lent 2021). Understanding possible connections between engagement in art and athletics unlocks avenues for these connections and the individuals, groups, and ecosystems who may benefit from them to flourish.

Data & Methods

To learn more about the relationship between time-use in artistic as compared to athletic activities that American and Thai young adults spend time doing, this study uses an original questionnaire, methodologically following the footsteps of Ito et al. (2020) and McManus and Furnham (2006). The questionnaire included English with Thai translations to assure the highest-quality understanding of concepts. A professional Thai language instructor and translator assisted the researcher to make sure that the same meanings were conveyed between languages. The researcher has four years of experience learning Thai language.

Data from the online survey has been obtained by distributing it through a convenience snowball sample of American and Thai adults ages 18-33. Snowballs stem from the researcher's own social networks in southern California and southern Thailand, aiming to recruit respondents who are mostly from these two regions. Southern Thailand's economy features a robust tourism industry and prominent exports such as oil, palm, rubber, and coconuts, and the region is culturally and politically 'suburban' to the country's capital, Bangkok (Chanchaichujit 2017; Glassman 2020; Hewison 2014; Manajit et al. 2020; Roengtam et al. 2017). Meanwhile, southern California's economy features one of the most prominent warehousing and freight industries in America. Cooper et al. (2017) write, "A total volume of 598.3 million tons of freight valued at $1.7 trillion moved throughout Southern California across the various modes of transportation, a daily average of 1.6 million tons valued at $4.7 billion" (p. ii). However, due to the snowball nature of the sample stemming from a PhD student at University of California,

Riverside, the American half of the sample, while indeed centralized in southern California, is disproportionately white-collar and highly educated.

To provide a background about the sorts of data being collected and analyzed in this study, it must be noted that the original questionnaire prompts respondents to list the particular artistic and athletic activities they most often spend time doing, as well as to answer multiple choice questions which are divided into five sections. Some of the data is numerical, using measurements such as estimated hours per week, age, number of children, siblings, and more. Other survey questions pertain to categorical variables, such as paid occupation, field of study (if any), and particular activities along with their location and who joins. The survey contains more variables than are analyzed in the present study, leaving room for a subsequent, more qualitative analysis of the particular activities respondents engage in as they relate to their sociodemographic characteristics.

Liu et al. (2022) found that, during the pandemic, participants in their study (N=470) reduced their involvement in both art and athletics, which fell under their categories of 'hobbies/indoor activity' and 'physical activity' respectively. Liu et al. used a Likert scale with five choices from 'never' to 'daily' for respondents to rate the frequency with which they engaged in seven categories of leisure activity, including 'hobbies/indoor activity' and 'physical activity.' While Liu et al. did not test for correlation between these two categories that loosely overlap with art and athletics, it is possible that their data holds information that could help to verify the findings of the present study. However, Liu et al. does not specifically track time-use or frame the global pandemic as a symptom of liquid modernity.

On top of the similar subject matter and Zygmunt Bauman's theoretical imprint, Tükel and Temel (2020) utilized similar methods to the present study. They used convenience sampling amongst college students. The present study does not draw its sample exclusively from college students, but due to the researcher's ties to academic institutions, the present study's convenience sample of young adults also includes many college students. The original questionnaire was distributed using snowball sampling during December 2021 until February 2022.

The present study's research device has five sections after informed consent: Basic Info, Living Situation, Family, Art, and Athletics. In the Basic Info section, demographic information such as age, gender identity, education, and others are examined. In the Living Situation section, information is gathered about household attributes, access to and ownership of various technologies, and estimates on hours per week in forms of time use such as paid work. In the family section, a background on respondents' childhood background, relatives, and social class is obtained. In the section on art, the particular artistic activities respondents most often do are listed along with how many hours per week, where, and with whom they regularly do each activity. The athletics section is the same as the art section, but for activities that respondents deem to be athletics.

It is common for time-use research to account for 'exercise' or 'physical activity' as a time-use category, or a leisure time-use category, but it is uncommon for art to be delineated as a form of time-use worthy of special attention beyond falling under a larger 'indoor leisure' umbrella. Standing relatively alone in this large gap in the literature,

McManus and Furnham (2006) studied aesthetic activities, incorporating undergraduate students as recruiters of respondents via snowball sampling to respond to a 33-item questionnaire. McManus and Furnham's questionnaire proposed 17 aesthetic activities, and they asked respondents about their engagement in these activities and general feelings about them. Even though art and athletics have been studied separately, the present study fills a gap in literature regarding how engagement artistic activities might relate to engagement in athletics.

For the purpose of analysis, only artistic and athletic activities that are actively engaged in counted towards the time-use measure. This means that watching sports, listening to music, or reading a novel, while frequently appearing in responses to the original questionnaire, counted as 0hrs/week of art or athletics for the present analysis. Appendix B has a full list of artistic activities listed by respondents that counted towards artistic time-use, and Appendix C has the same for athletics. The data for variables Total Art Time and Total Athletics Time were collected and recoded quite similarly and will be described below.

The variable, Total Art Time, refers to the total number of hours per week respondents spend doing artistic activities. This was calculated by subtracting any time respondents spent doing passive activities they considered to be artistic (such as listening to music or reading a novel) from their reported total number of hours spent doing art each week. 41% of respondents reported zero hours per week spent doing art. For time-use in art, ranges of time were included as response choices to the questions, "about how many hours per week do you spend doing artistic activities?" and "for this particular

activity, about how many hours per week…" (for the top two artistic activities that each respondent currently tends to engage in). Respondents also had the option to enter their own response, some of which indicated "." "-," or "n/a" instead of zero. These responses were recoded to be the median of each range. For example, the preponderance of "1.5 hrs/week" responses for total hours per week doing artistic activities tended to come from respondents who listed 1-2 hrs/week for one activity, and zero for the questions pertaining to a possible second sort of artistic activity. Similar to Total Art Time, Total Athletics Time was surveyed using ranges of times. Then, the medians of ranges were entered, and passive activities such as watching sports were deleted. Respondents were asked to list the top two particular athletic activities that they engage in. Most literature on physical activity preselects categories for respondents to choose (Ito et al. 2020; Eime et al. 2015) and the present study expands on this by leaving the judgement of what is art or athletics first to the respondents, and then to the researcher for the coding of the dependent variable and primary independent variable outlined above.

Next are the control variables. 'Country' is a variable that distinguishes between America and Thailand within the sample. When importing to STATA, America was recoded as "0" and Thailand was recoded to be "1." Analysis for the present study includes 142 (28%) Americans and 365 (72%) Thais. Veal (2016) reveals that countries with less within-country inequality feature more leisure time in cultural activities and sport. For the variable, "Age," respondents listed their age at the time of doing the survey. Almost half of respondents (49.32%) were ages 18-20, while the rest of the sample was scattered between ages 21-33. This is likely the result of the survey being shared within

group chats for studying for college or technical school classes. 362 (71%) respondents are currently studying in college, university, or technical school in America or Thailand.

For the variable, 'Gender Identity,' respondents were given an open-ended optional question prompting them to state their gender identity. This allowed for nonbinary and LGBTI respondents to specify their preferred identity, as America and Thailand both feature a variety of popular gender identities as well as discrimination that could affect participation in art or athletics (Ojanen et al. 2019). Results were then coded as male (1), nonbinary (2) and female (3), and for analysis, the latter two included as a separate dummy variable with reference to 'male.' The same process of creating numerous dummy variables for one survey question was used for ranges of paid work hours, due to the fact that the highest response on the questionnaire was "more than 40 hours per week" whereas the other possible responses were ranges of numbers. This survey design flaw forced the creation of nine dummy variables for various ranges of paid work hours per week. The 'i.' prefix was used during regression analysis on STATA to carry this out.

Existing time-use research on leisure physical activity tends to pay attention to urbanity/rurality (Artemov 1981; Eime et al. 2015; Eime et al. 2017; Florindo et al. 2017). Respondents were given the option to select multiple choices from seven options ranging from "in the middle of a city" to "remote countryside." Most respondents only selected one option, but if multiple responses were listed, their scores were averaged and rounded to the nearest whole or half number. The variable 'urbanity/rurality' is a score from 1-7 from urban to rural.

One of the biggest strengths of existing time-use research is its accounting for unpaid care work, including household chores performed for others (Astbury et al. 2020; Bird and Fremont 1991; Cornwell et al. 2019; Dunaway 2014; Raskind et al. 2020; Sayer and Gornick 2009; Smith et al. 2014). Because of this, it was essential to ask respondents about their care work. In the survey, respondents estimated the number of hours per week they spend doing care work and select the appropriate range from a list of options. The median value of each range was included for analysis such that a respondent who selected the option '25-30 hours per week' was coded as 27.5. Accounting for time-use in unpaid care work is important because some people have considerable obligations in this regard which could affect their time-use in art and athletics.

Similarly, any young parents in this study's sample may need to spend a considerable amount of time taking care of their children, so number of children is also a variable included in the study's model (Fancourt et al. 2020; Lim et al 2011). Young parents sometimes participate in art or athletics with their children such as taking a walk in a park with their baby in a stroller, or fingerpainting. The original survey asked about who typically joins respondents when they participate in the particular artistic and athletic activities they list, and some respondents did include their children. The discussion will expand on the future usefulness data on location and who joins respondents for particular artistic and athletic activities.

A variety of household demographic information was collected in the original survey, and variables included in the present model pertaining to household demographics are internet access and the number of people living in respondents' homes.

Internet access is important infrastructure for young adults, and is typically obtained through Wifi or cellular data (O'brien et al. 2022). However, screen use negatively correlates with physical activity (Liu et al. 2022; Wei et al. 2015). The variable, Internet Access was obtained by asking respondents whether or not they have wifi or cellular data access at home. Next is the control variable, Household Size, which was obtained by asking respondents how many others they live with. Household size has been shown to correlate with wealth (Soseco 2022). People who live with fewer people might have more wealth, but they also might have fewer people to encourage them to participate in art and athletics together.

Finally, the last variable considered in the present study's model is whether or not a respondent is a student. Most of the time-use literature on young adults focuses exclusively on students (Tükel and Timmel 2020; Keating et al. 2005; Sevilla et al. 2012). A majority of this study's sample are also students at colleges, universities, or technical schools, but the 145 non-students included add a dimension to this study that better reflects young adults broadly, not just students.

Prior to importing data into STATA software for analysis, the sample was reduced from 532 to 507 to eliminate responses that fell outside the study's parameters or were almost entirely blank. To begin analysis, a correlation matrix was run between time-use in art and time-use in athletics. Following this, a model was constructed including controls (see table 3). In the sample studied, gender identity and nationality had statistically significant relationships with time-use in athletics. Most importantly, there was a significant relationship with a 95% confidence interval that participants who spent

more time doing art, also spend more time doing athletics. This supports the complimentary hypothesis.

The full model contains many control variables, and this allowed for insights beyond simply the primary research question including seeing whether multiple control variables relate to one another. The original data obtained for the present study confirms prior research findings that gender and nationality relate to physical activity engagement, referred to in the present study as time-use in athletics (Rasmussen et al. 2018; Wei et al. 2015; Ito et al. 2020; Straker et al. 2021). If multiple variables relate to one another within the same model, this is referred to as multicollinearity. To examine multicollinearity in the sample data, the Variance Inflation Factor (VIF) was calculated. The full model (Model 3) has a VIF of 1.45, the model with only control variables as they relate to Total Athletics (Model 2) has a VIF of 1.43, and due to it only including one independent variable, Model 1 has a VIF of 1.00.

Variance in one form of time-use may affect variance in other forms of time-use for any individual (Sullivan and Katz-Gerro 2007; Lim et al. 2011). This is an example of heteroskedacity, and in this case it means that there could be a different level of variance in athletic time use amongst individuals who spend exceptionally large amounts of time doing art than there is variance in athletics time use amongst individuals who spend little or no time doing art. Due to this possibility, testing for constant variance versus heteroskedacity was run on all three models. For Model 1, just time-use in athletics and time-use in art, the Breusch-Pagan / Cook-Weisberg test for heteroskedasticity yielded a Chi-Squared value of 3.40 with a probability of null hypothesis of .065, meaning that

there is a 6.5% chance that the Chi-Squared value would be obtained with constant variance, strongly indicating heteroskedacity. Adding controls indicated with certainty that the data has heteroskedacity. Appendix D shows the results for all three models' tests for heteroskedacity. The presence of heteroskedacity means that for different levels of time-use in art, the amount of variance in time-use in athletics varies, and to correct for this, robust standard errors are used and can be found in Table 2.

It is possible that outliers skew the results. To check for this, robust regression (RREG) was run, yielding statistically significant results with a p-value of .000 for Total Art Time, Gender Identity, and Country as they relate to Total Athletics. According to robust regression, we can expect a .07 hour increase (4.2 minutes per week) increase in athletic activity for each hour of artistic activity engaged in, with a 99.9% degree of confidence due to the p-value of 0.00. Below is a table describing these results for the full model. Robust regression downweighted 26 responses to be weighted as .05 or less, including 19 extreme outliers downweighted to .000. Correlations between some variables increased when excluding the 26 most extreme outliers. Intuitively, paid work hours and student status correlate moderately, and care work and number of children correlate moderately too. Correlation between time-use in art and in athletics jumps to .148 when excluding 26 outliers.

Results:

A significant relationship was found in which time-use in art affects time-use in athletics. This relationship is, however, small, with a .090 correlation coefficient between Total Art Time and Total Athletic Time when running the full model, and .148 when the 26 strongest outliers are eliminated. Most notably, the complimentary hypothesis is supported. Amongst the sample of Thai and American young adults, spending time in artistic activities does seem to slightly but reliably increase the time that one spends doing athletic activities. The competing hypothesis that there is a negative relationship is not supported. However, elements from the competing as well as the intuitive hypotheses still may carry some truth due to the weakness of the statistically significant finding. It very well may still be the case that time spent doing art does indeed take up time that could otherwise be spent doing athletics amongst some respondents. Still, the statistically significant finding when controlling for 10 other variables, using robust standard errors, and checking for outliers using robust regression indicates that a small but statistically significant relationship exists between time-use in art and time-use in athletics.

For interpreting the results shown in Table 2, Model 1 pertains to a regression analysis with robust standard errors run between Total Art Time and Total Athletics Time, measured in hours per week. Model 2 is a regression of only the control variables with Total Athletics Time. Model 3 is the full model, including Total Art Time as the primary independent variable. This allows for the relationship between the primary independent and dependent variables to be seen alone, the relationship between controls and the dependent variable to be seen without the primary independent variable, and

finally, for the full model to be compared to the first two. For controls as well as the primary independent variable of Total Art Time, any statistically significant relationships from models 1 and 2 are also significant in the full model. And the reliability of the relationships increased when controlling for outliers using robust regression.

Addressing the central research question was not the only significant result found in the present study. Country and Gender Identity also yielded statistically signricant results in each of their relationships to Total Athletics Time, confirming previous leisure studies literature documenting national differences in leisure participation (Veal 2016; Lim et al. 2011). To a statistically significant degree, male respondents and Americans are more likely to spend more time doing athletics. Also worth noting is the marginally significant relationship between Urbanity and Total Athletics Time. The difference of expected time spent doing athletics as affected by Country and Gender Identity is greater than the difference in Total Athletics Time as affected by Total Art Time. However, Country and Gender Identity are more intuitive explanations for variance of time-use in athletic activity, making the statistically significant relationship between Total Art Time and Total Athletics Time especially novel and worth further consideration.

The fact that time-use in art is indeed a statistically significant variable affecting time-use in athletics is indeed noteworthy and suggests that explanations for the complimentary hypothesis ought to be explored further. Furthering the excitement surrounding the headline finding of time-use in art affecting time-use in athletics is how the relationship becomes stronger when excluding outliers. This suggests that people who do a low-to-medium amounts of art may most reliably also experience some sort of extra

ease in doing athletics. This conversation will be continued in the discussion section, which follows the correlation matrix, regression results, and descriptive statistics below.

Table 1. Correlation Coefficients Among Predictors

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1) Athletics Hrs/Wk	-----											
(2) Country (USA/TH)	-.200	-----										
(3) Age	.050	-.488	-----									
(4) Gender Identity	-.261	.086	-.084	-----								
(5) Paid Work Hrs/Wk	.073	-.426	.694	-.087	-----							
(6) Currently a Student	.073	-.451	.701	-.081	.650	-----						
(7) Number of Children	-.031	-.086	.251	.028	.087	.150	-----					
(8) Caretaking Hrs/Wk	-.036	.073	.127	-.065	.054	.065	.480	-----				
(9) Rurality/ Urbanity	-.120	.226	-.153	.036	-.129	-.129	-.035	.042	-----			
(10) Home Wifi	-.109	.352	-.172	.018	-.123	-.151	-.027	.013	.278	-----		
(11) Num. People Living With	-.041	.333	-.309	.035	-.289	-.333	-.043	-.039	.096	.142	-----	
(12) Art Hrs/Wk	.090	.082	-.104	.013	-.037	-.071	-.064	-.070	.002	-.040	.026	-----

Table 2. OLS Models of Total Athletic Time Regressed on Selected Independent Variables

	Model 1: Effect of Art time on Athletic Time	Model 2: Effects of Selected Independent Variables on Athletic Time	Model 3: Effect of Art Time on Athletic Time Controlled for Selected Independent Variables
Hours Per Week Doing Artistic Activities	.060* (.028) **.090**		.066* (.029) **.099**
Nationality: Thailand (Reference Country: America)		-1.67** (.575) **-.180**	-1.769** (.570) **-.191**
Age		-.105 (.070) **-.107**	-1.953 (.070) **-.093**
Gender Identity: Reference Identity: Male			
Nonbinary		-1.860** (.698) **-.138**	-1.952** (.665) **-.145**
Female		-2.440*** (.468) **-.282**	-2.451*** (.472) **-.284**
Paid Work Hours/Week (Reference of 0hrs/wk):			
1-5 hrs/wk		-.659 (.743) **-.039**	-.588 (.571) **-.035**
5-10 hrs/wk		.457 (.709) **.032**	.416 (.710) **.030**
10-15 hrs/wk		-1.127 (.807) **-.054**	-1.157 (.831) **-.055**

15-20 hrs/wk	-.258 (.856) **-.013**	-.461 (.864) **-.035**
20-25 hrs/wk	.476 (1.382) **-.017**	.334 (1.370) **-.012**
25-30 hrs/wk	-.778 (1.572) **-.026**	-.887 (1.413) **-.030**
30-35 hrs/wk	-.908 (1.092) **-.030**	-.969 (1.065) **-.032**
35-40 hrs/wk	.833 (.898) **-.062**	.599 (.896) **.044**
>40 hrs/wk	.170 (.891) **.013**	.162 (.877) **.013**
Currently a Student (1 = yes, 2 = no)	.041 (.606) **.004**	.055 (.596) **.006**
Number of Children	-.138 (.393) **-.013**	-.137 (.378) **-.013**
Unpaid Care Work Hrs/wk	-.005 (.015) **-.015**	-.003 (.014) **-.008**
Rurality/ Urbanity (Low = Urban, High = Rural)	-.174 (.095) **-.077**	-.176 (.095) **-.077**
Wifi (Reference: Has Wifi at Home):		
Only Cellular Data at Home	-.748 (.396) **-.078**	-.671 (.390) **-.070**
No Internet Access at Home	1.169 (1.251) **.049**	1.300 (1.250) **-.054**

Number of Others Living in Household		.052 (.113) **.021**	.057 (.114) **.023**
R^2	.008	.134	.143
N	507	507	507

*p < .05 **p < .01 ***p < .001 (two-tailed tests)
Note: Each cell reports unstandardized coefficients, with robust standard errors in parentheses and standardized coefficients in bold.

Descriptive Statistics:

Table 3: Time-Use in Artistic Activities

Artistic Activity (hrs/wk)	Frequency	Percentage	Artistic Activity (hrs/wk)	Frequency	Percentage
0	208	41.03	10.5	1	0.2
1	2	0.39	11	1	0.2
1.5	59	11.64	12	13	2.56
2	1	0.2	12.5	2	0.39
3	69	13.61	13	1	0.2
4.5	20	3.94	14	4	0.79
5	21	4.14	14.5	1	0.2
6	19	3.75	15	3	0.59
6.5	5	0.99	16	2	0.39
7	13	2.56	18	8	1.58
8	11	2.17	18.5	1	0.2
8.5	5	0.99	19	2	0.39
9	4	0.79	20	3	0.59
10	8	1.58	21	6	1.18

Table 4: Time-Use in Athletic Activities

Athletics Hours Per Week	Frequency	Percentage	Athletics Hours Per Week	Frequency	Percentage
0	45	8.88	11	17	3.35
1	115	22.68	13	11	2.17
1.5	46	9.07	15	6	1.18
3	113	22.29	17	2	0.39
5	70	13.81	19	3	0.59
7	44	8.68	21	7	1.38
9	28	5.52	**Total**	**507**	**100%**

Table 5: Age

Age	Frequency	Percentage	Age	Frequency	Percentage
18	103	20.12	26	13	2.56
19	81	15.98	27	19	3.75
20	66	13.02	28	28	5.52
21	43	8.48	29	18	3.55
22	35	6.9	30	11	2.17
23	14	2.76	31	9	1.78
24	19	3.75	32	4	0.79
25	30	5.92	33	14	2.76

Chart 1: Country

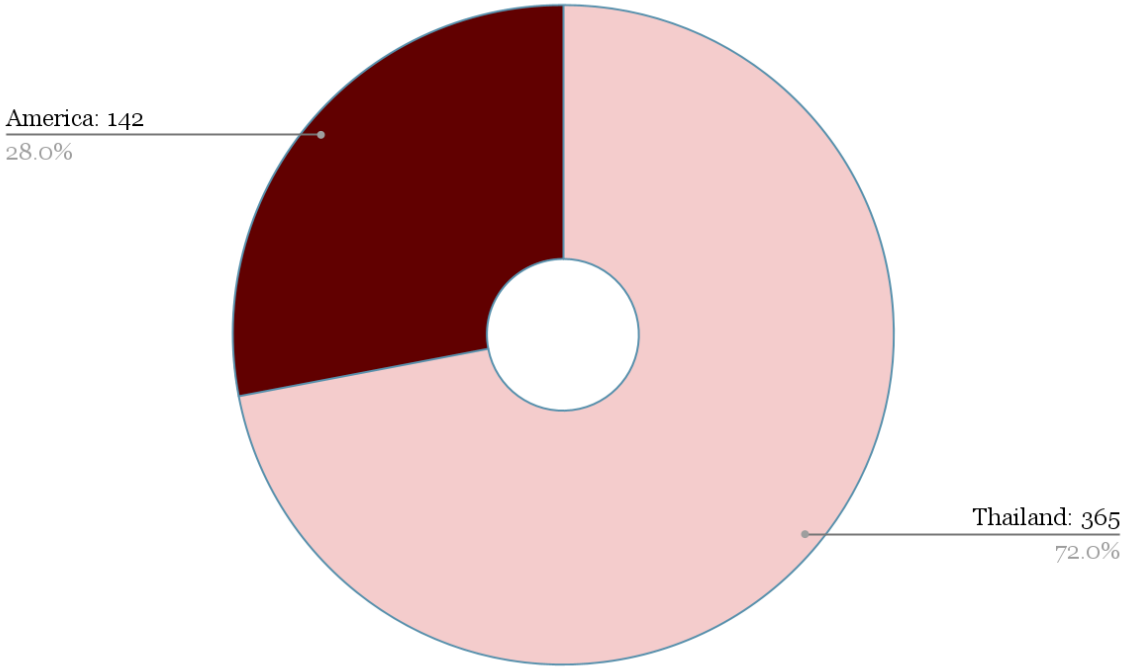

Chart 2: Gender Identity

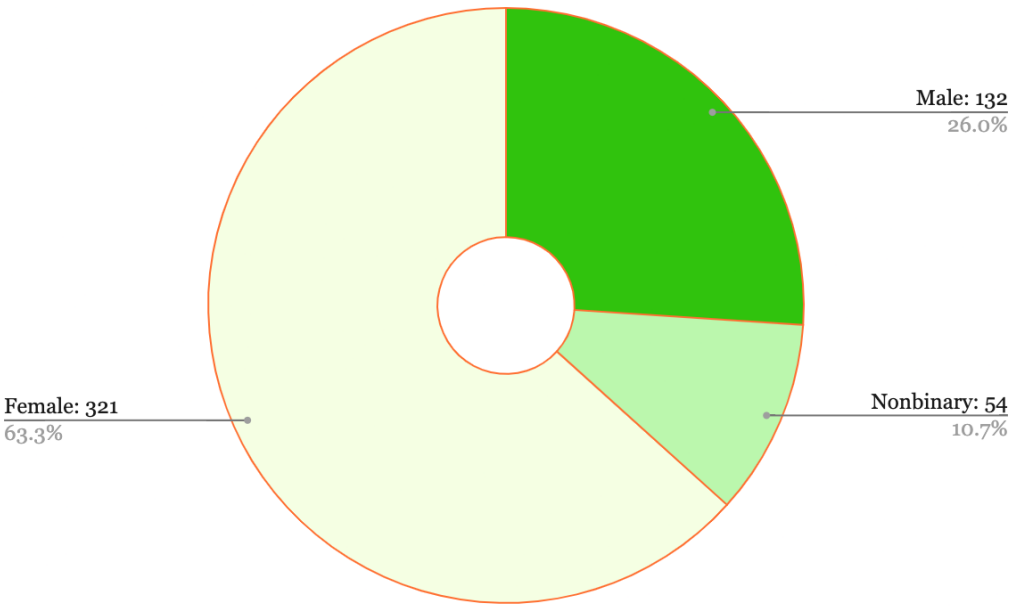

Table 6: Paid Work Hours

Paid Work Hours	Frequency	Percent of Sample
0	234	46.15
1-5 hr/week	33	6.51
5-10 hr/week	49	9.66
10-15 hr/week	21	4.14
15-20 hr/week	23	4.54
20-25 hr/week	12	2.37
25-30 hr/week	10	1.97
30-35 hr/week	10	1.97
35-40 hr/week	54	10.65
More than 40 hr/week	61	12.03
Total	507	100

Chart 3: Currently a College/ University Student

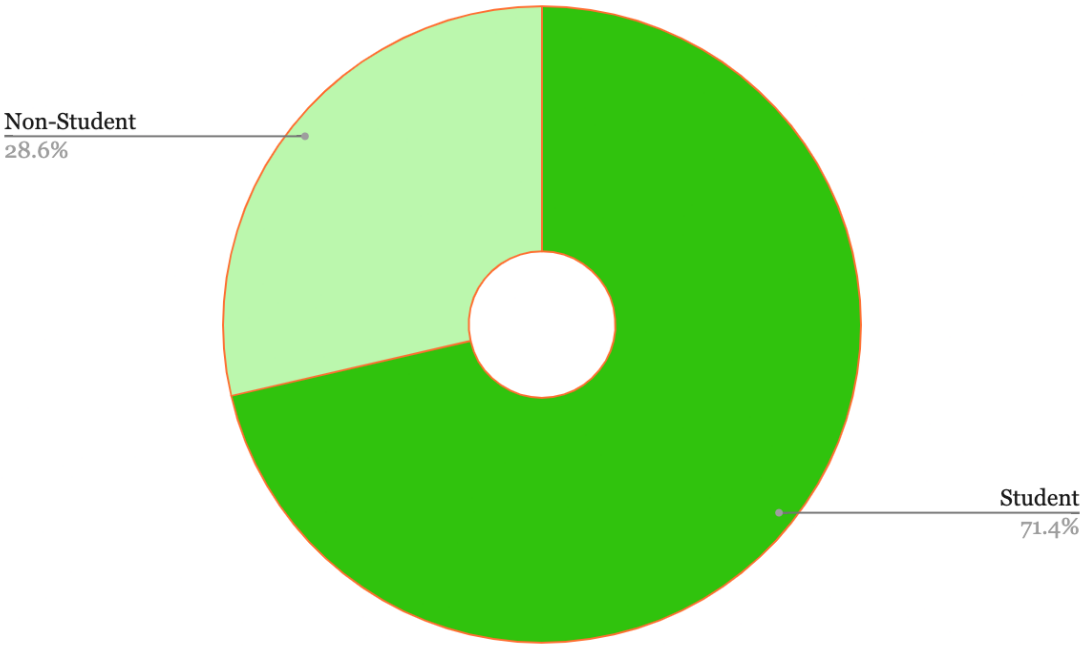

Table 7: Number of Children

Number of Children	Frequency	Percentage
0	480	94.67
1	17	3.35
2	7	1.38
3	2	0.39
4	1	0.2

Discussion:

The significant finding of this study is that the complimentary hypothesis is supported: amongst the 507 young adults sampled in America and Thailand, more time-use in art does indeed correlate with more time-use in athletics. The relationship found in the sample between time-use in art and time-use in athletics may not be large, but it is statistically significant, prompting further research. Most notably, future research on this relationship ought to pay attention to particular artistic and athletic activities along with sociodemographic characteristics of respondents (Jackson 1994; Fancourt et al. 2020; Brady 2005). Luckily, the data collected for the present study provides a starting point, with lists of particular activities found in Appendicies B and C. Additionally, data obtained in the present study's original questionnaire but not coded for the quantitative analysis conducted in the present study can be coded for other forms of analysis. Noteworthy variables obtained in this study's questionnaire but not included in the present analysis pertain to compensation for engagement in art and athletics and the effects of the Covid-19 pandemic on leisure. Compensation for art, as well as the pandemic, have been shown to affect engagement particular leisure categories (Wohl 2021; Liu et al. 2022). To further expand this path of research, qualitative data collection such as interviews and observations could assist in painting a fuller picture of what motivates the relationship between time-use in art and time-use in athletics.

Because art is the independent variable and athletics is the dependent variable for the present study, another interesting aspect of the findings is that time-use in art is affecting time-use in athletics, and not the other way around. When a regression is run the

opposite direction, no statistically significant results are found between the two: being physically active does not automatically make people more creative, but engaging in artistic activity seems to be an avenue towards more physical activity. This is a thrilling finding from the present study, coinciding with findings that self-efficacy and intention correlate strongly with physical activity (Pan et al. 2009) and adds an interesting complication to findings that physically-demanding work has a negative relationship with physical activity (Rasmussen et al. 2018). Having the time and initiative to pursue art as a hobby might increase the expected time one spends engaging in athletics.

The statistically significant finding that time-use in art affects time-use in athletics sets the stage for future research. This may involve qualitative data obtained in this study's original questionnaire or future data collection from different populations. Another intriguing future research path regarding the relationship between time-use in art and time-use in athletics may involve biometric data obtained through smart bracelets. Previous research using biometric data from the 'Midlife in the U.S.' study examined childhood SES and adult physical activity (Lee et al. 2018). That research found that adults whose childhood SES was higher had less physical activity at work or when doing chores, but more during leisure relative to their lower childhood SES counterparts. The present study paves the way for similar research that accounts for sociodemographics, artistic activities, as well as biometric data on physical activity.

Of course, it is also possible that the results of the present study are skewed by a bias in responses. Respondents who were more open-hearted about considering some of their regular activities to be artistic might also be extra willing to consider some of their

regular activities to be athletic. However, the reliability of the statistical relationship between Total Art Time and Total Athletics Time in the present study's models suggests that even if there is some survey response bias, that there is also a real connection between engagement in art with engagement in athletics.

A possibility especially worth examining is the effect of doing just a little bit of art on athletic engagement. The results of the present study indicate that the relationship between time-use in art and time-use in athletics is strongest and most significant when using robust regression that downweights to zero any outliers that are responses with exceptionally high amounts of artistic time-use. Amongst the sample of 507 young adults from America and Thailand there is a strongly reliable but small relationship in which doing a little bit of art will increase the amount of athletics one does. The importance in the effect of doing just a little bit of art exists with its scaleability. Programs, policies, and facilities such as community centers that aim to bring about benefits such as individual physical and emotional health, interpersonal social connections, and low-carbon activity could use this study's findings to motivate the creation of ways for people who might not ordinarily do any art to do at least a little bit of art. This may bring the additional benefit of enabling them to also spend slightly more time doing athletics. It may not seem earth-shattering, but small changes in lifestyle and daily habit are easier to achieve than drastic changes, especially for large populations. If a widespread slight increase in the amount of people who spend at least some time doing art can be achieved through a plethora of policies, initiatives, and facilities, then an additional benefit may be increased

time-use in athletics too. Imagine little painting studio classrooms that were as ubiquitous as gas stations, that were free to use!

In a liquid modern world dominated by individualistic life-politics, much hope can be found in the relationship between engagement in art and in athletics. More research is necessary, but if the roots of this connection can be understood better, then increasing engagement in these beneficial categories of activity becomes more feasible. More art and athletics on earth is a form of climate change mitigation and supports health and social bonds.

Bibliography

1. Abbott, Kayleigh A., Matthew J. Shanahan, and Richard W. J. Neufeld. 2013. "Artistic Tasks Outperform Nonartistic Tasks for Stress Reduction." *Art Therapy* 30(2):71–78. doi: 10.1080/07421656.2013.787214.

2. Anon. 2021. "Overview." *World Bank*. Retrieved November 3, 2021 (https://www.worldbank.org/en/country/thailand/overview).

3. Anon. n.d. "Thailand | Household Socio Economic Survey: Household Income and Expenditure | CEIC." Retrieved November 3, 2021 (https://www.ceicdata.com/en/thailand/household-socio-economic-survey-household-income-and-expenditure).

4. Artemov, Victor A. 1981. "Athletic Activity in the Lifestyle of Urban and Rural Residents (Based on Time-Budget Data)." *International Review of Sport Sociology* 16(1):53–59. doi: 10.1177/101269028101600104.

5. Astbury, Chloe, Louise Foley, Tarra L. Penney, and Jean Adams. 2020. "How Does Time Use Differ between Individuals Who Do More versus Less Foodwork? A Compositional Data Analysis of Time Use in the United Kingdom Time Use Survey 2014–2015." *Nutrients* 12(8):2280. doi: 10.3390/nu12082280.

6. Bauman, Zygmunt. 2005. *Liquid Life*. Cambridge, MA: Polity.

7. Bauman, Zygmunt. 2008. *The art of life*. Cambridge, MA: Polity.

8. Bauman, Zygmunt. 2009. *Does Ethics Have a Chance in a World of Consumers?* Cambridge, MA: Harvard University Press.

9. Bauman, Zygmunt. 2003. *Wasted Lives: Modernity and its Outcasts*. Cambridge, MA: Polity.

10. Bauman, Zygmunt, D. Brzezinski, T. C. Campbell, M. Davis, J. Palmer, and K. Bartoszynska. 2021. *Culture and Art: Selected Writings,* Volume 1. Cambridge, MA: Polity.

11. Bauman, Zygmunt, and Tim May. 2019. *Thinking Sociology.* Third Edition. Oxford, UK. Wiley.

12. Bentley, Tim, Nicola Green, David Tappin, and Roger Haslam. 2020. "State of Science: The Future of Work – Ergonomics and Human Factors Contributions to the Field." *Ergonomics* 0(0):1–13. doi: 10.1080/00140139.2020.1841308.

13. Bell, Chloe E., and Steven J. Robbins. 2007. “Effect of Art Production on Negative Mood: A Randomized, Controlled Trial.” Art Therapy 24(2):71–75. doi: 10.1080/07421656.2007.10129589.

14. Bird, Chloe E., and Allen M. Fremont. 1991. “Gender, Time Use, and Health.” *Journal of Health and Social Behavior* 32(2):114–29. doi: 10.2307/2137147.

15. Brady, Martha. 2005. “Creating Safe Spaces and Building Social Assets for Young Women in the Developing World: A New Role for Sports.” *Women’s Studies Quarterly; New York* 33(1/2):35–49.

16. Bregman, Walker. 2017. *Utopia for Realists: The Case for a Universal Basic Income, Open Borders, and a 15-hour Workweek.* London: Bloomsbury Publishing.

17. Chanchaichujit, Janya, Jose Saavedra-Rosas, and Arshinder Kaur. 2017. “Analysing the Impact of Restructuring Transportation, Production and Distribution on Costs and Environment – a Case from the Thai Rubber Industry.” *International Journal of Logistics Research and Applications* 20(3):237–53. doi: 10.1080/13675567.2016.1217317.

18. Cornwell, Benjamin, Jonathan Gershuny, and Oriel Sullivan. 2019. “The Social Structure of Time: Emerging Trends and New Directions.” *Annual Review of Sociology* 45(1):301–20. doi: 10.1146/annurev-soc-073018-022416.

19. Dąbrowski, Leszek S., and Stefania Środa-Murawska. 2022. “Globalised and Culturally Homogenised? How Generation Z in Poland Spends Their Free Time.” Leisure Studies 41(2):164–79. doi: 10.1080/02614367.2021.1975800.

20. Daniel, Ryan, and Robert Johnstone. 2017. “Becoming an Artist: Exploring the Motivations of Undergraduate Students at a Regional Australian University.” *Studies in Higher Education* 42(6):1015–32. doi: 10.1080/03075079.2015.1075196.

21. Dunaway, Wilma A. 2014. “Bringing Commodity Chain Analysis Back to Its World-Systems Roots: Rediscovering Women’s Work and Households.” *Journal of World - Systems Research; Pittsburgh* 20(1):64–81.

22. Eime, Rochelle M., Melanie J. Charity, Jack T. Harvey, and Warren R. Payne. 2015. “Participation in Sport and Physical Activity: Associations with Socio-Economic Status and Geographical Remoteness.” *BMC Public Health* 15(1):434. doi: 10.1186/s12889-015-1796-0.

23. Eime, Rochelle M., Jack Harvey, Melanie J. Charity, Meghan Casey, Hans Westerbeek, and Warren R. Payne. 2017. "The Relationship of Sport Participation to Provision of Sports Facilities and Socioeconomic Status: A Geographical Analysis." *Australian and New Zealand Journal of Public Health; Richmond* 41(3):248–55.

24. Elliott, Rebecca. 2018. "The Sociology of Climate Change as a Sociology of Loss." *Archives Européennes de Sociologie: European Journal of Sociology; Cambridge* 59(3):301–37. doi: http://dx.doi.org.ccl.idm.oclc.org/10.1017/S0003975618000152.

25. Fancourt, Daisy, Claire Garnett, and Daniel Müllensiefen. 20200113. "The Relationship between Demographics, Behavioral and Experiential Engagement Factors, and the Use of Artistic Creative Activities to Regulate Emotions." *Psychology of Aesthetics, Creativity, and the Arts*. doi: 10.1037/aca0000296.

26. Florindo, Alex Antonio, Ligia Vizeu Barrozo, William Cabral-Miranda, Eduardo Quieroti Rodrigues, Gavin Turrell, Moisés Goldbaum, Chester Luiz Galvão Cesar, and Billie Giles-Corti. 2017. "Public Open Spaces and Leisure-Time Walking in Brazilian Adults." International Journal of Environmental Research and Public Health 14(6). doi: 10.3390/ijerph14060553.

27. Frey, Bruno S., Markus Schaffner, Sascha L. Schmidt, and Benno Torgler. 2013. "Do Employees Care About Their Relative Income Position? Behavioral Evidence Focusing on Performance in Professional Team Sport." *Social Science Quarterly* 94(4):912–32. doi: http://dx.doi.org/10.1111/ssqu.12024.

28. Gerber, Allison. 2017. *The Work of Art: Value in Creative Careers*. Stanford, CA: Stanford.

29. Glorieux, Ignace, Ilse Laurijssen, Joeri Minnen, and Theun Pieter van Tienoven. 2010. "In Search of the Harried Leisure Class in Contemporary Society: Time-Use Surveys and Patterns of Leisure Time Consumption." *Journal of Consumer Policy* 33(2):163–81. doi: 10.1007/s10603-010-9124-7.

30. Graff Zivin, Joshua, and Matthew Neidell. 2014. "Temperature and the Allocation of Time: Implications for Climate Change." *Journal of Labor Economics* 32(1):1–26. doi: 10.1086/671766.

31. Giulianotti, Richard. 2005. *Sport: a critical sociology*. Cambridge, MA: Polity.

32. Guillen-Royo, Monica, Jackeline Velazco, and Laura Camfield. 2013. "Basic Needs and Wealth as Independent Determinants of Happiness: An Illustration

from Thailand." Social Indicators Research 110(2):517–36. doi: 10.1007/s11205-011-9941-3.

33. Hawken, Paul. 2017. Drawdown: The Most Comprehensive Plan ever Proposed to Reverse Global Warming. London: Penguin.

34. Hewison, Kevin. 2014. "Considerations on Inequality and Politics in Thailand." Democratization 21(5):846–66. doi: 10.1080/13510347.2014.882910.

35. Honeycutt, Benjamin. 2013. *Free Time: The Forgotten American Dream*. Philadelphia, PA: Temple University Press.

36. Hutangura, Paretas. 2018. "Body and Mind in Art." *Singapore Art Exhibitions:* 13:1: 138-9.

37. Ito, Eiji, Shintaro Kono, and Gordon J. Walker. 2020. "Development of Cross-Culturally Informed Leisure-Time Physical Activity Constraint and Constraint Negotiation Typologies: The Case of Japanese and Euro-Canadian Adults." *Leisure Sciences* 42(5–6):411–29. doi: 10.1080/01490400.2018.1446064.

38. Iwasaki, Yoshitaka, Hitoshi Nishino, Tetsuya Onda, and Christopher Bowling. 2007. "Research Reflections Leisure Research in a Global World: Time to Reverse the Western Domination in Leisure Research?" *Leisure Sciences* 29(1):113–17. doi: 10.1080/01490400600983453.

39. Jackson, E. L. 1994. "Activity-Specific Constraints on Leisure Participation." *Journal of Park and Recreation Administration* 12(2):33–49.

40. Katewongsa, Piyawat, Kornkanok Pongpradit, and Dyah Anantalia Widyastari. 2021. "Physical Activity Level of Thai Children and Youth: Evidence from Thailand's 2018 Report Card on Physical Activity for Children and Youth." *Journal of Exercise Science & Fitness* 19(2):71–74. doi: 10.1016/j.jesf.2020.11.002.

41. Keating, Xiaofen Deng, Jianmin Guan, José Castro Piñero, and Dwan Marie Bridges. 2005. "A Meta-Analysis of College Students' Physical Activity Behaviors." *Journal of American College Health* 54(2):116–26. doi: 10.3200/JACH.54.2.116-126.

42. Lee, Chioun, Vera K. Tsenkova, Jennifer M. Boylan, and Carol D. Ryff. 2018. "Gender Differences in the Pathways from Childhood Disadvantage to Metabolic Syndrome in Adulthood: An Examination of Health Lifestyles." *SSM - Population Health* 4:216–24. doi: 10.1016/j.ssmph.2018.01.003.

43. Lent, Jeremy. 2021. *The Web of Meaning: Integrating Science and Traditional Wisdom to Find Our Place in the Universe.* London, UK: Profile.

44. Lim, So Youn, Stacey Warner, Marlene Dixon, Brennan Berg, Chiyoung Kim, and Michael Newhouse-Bailey. 2011. "Sport Participation Across National Contexts: A Multilevel Investigation of Individual and Systemic Influences on Adult Sport Participation." *European Sport Management Quarterly* 11(3):197–224. doi: 10.1080/16184742.2011.579993.

45. Liu, Hung-Ling (Stella), Erin S. Lavender-Stott, Christin L. Carotta, and Aileen S. Garcia. 2022. "Leisure Experience and Participation and Its Contribution to Stress-Related Growth amid COVID-19 Pandemic." Leisure Studies 41(1):70–84. doi: 10.1080/02614367.2021.1942526.

46. Manajit, Suchita, Bhubate Samutachak, and Marc Voelker. n.d. "Socio-Economic Determinants of Consumption Patterns in Thailand." 13.

47. Mazza, Nicholas. 2012. "Poetry/Creative Writing for an Arts and Athletics Community Outreach Program for at-Risk Youth." *Journal of Poetry Therapy* 25(4):225–31. doi: 10.1080/08893675.2012.738491.

48. McCright, Aaron M., Sandra T. Marquart-Pyatt, Rachael L. Shwom, Steven R. Brechin, and Summer Allen. 2016. "Ideology, Capitalism, and Climate: Explaining Public Views about Climate Change in the United States." Energy Research & Social Science 21:180–89. doi: 10.1016/j.erss.2016.08.003.

49. McManus, I. C., and A. Furnham. 2006. "Aesthetic Activities and Aesthetic Attitudes: Influences of Education, Background and Personality on Interest and Involvement in the Arts." *British Journal of Psychology* 97(4):555–87. doi: 10.1348/000712606X101088.

50. Mullaney-Loss, Patricia. 2020. "The Arts and Culture Sector's Contributions to Economic Recovery and Resiliency in the United States." *National Assembily of State Arts Agencies*. 1-5.

51. Murakami, Haruki. 2007. *What I Talk about When I Talk about Running.* New York, NY: Knopf.

52. Newman, T., K. Curtis, and J. Stephens. 2003. "Do Community-Based Arts Projects Result in Social Gains? A Review of the Literature." *Community*

Development Journal 38(4):310–22. doi: 10.1093/cdj/38.4.310.

53. Nieri, Tanya, and Elizabeth Hughes. 2016. "All about Having Fun: Women's Experience of Zumba Fitness." *Sociology of Sport Journal* 33(2):135–45. doi: 10.1123/ssj.2015-0071.

54. Ojanen, Timo T., James Burford, Adisorn Juntrasook, Athita Kongsup, Titikarn Assatarakul, and Nada Chaiyajit. 2019. "Intersections of LGBTI Exclusion and Discrimination in Thailand: The Role of Socio-Economic Status." *Sexuality Research and Social Policy* 16(4):529–42. doi: 10.1007/s13178-018-0361-x.

55. O'Brien, Oonagh, Dr. Alexander Sumich, Dr. Eiman Kanjo, and Dr. Daria Kuss. 2022. "WiFi at University: A Better Balance between Education Activity and Distraction Activity Needed." Computers and Education Open 3:100071. doi: 10.1016/j.caeo.2021.100071.

56. Pan, Sai Yi, Christine Cameron, Marie DesMeules, Howard Morrison, Cora Lynn Craig, and XiaoHong Jiang. 2009. "Individual, Social, Environmental, and Physical Environmental Correlates with Physical Activity among Canadians: A Cross-Sectional Study." *BMC Public Health* 9(1):21. doi: 10.1186/1471-2458-9-21.

57. Raskind, Ilana G., Shailaja S. Patil, Nikhil Tandon, Sharanya Thummalapally, Michael R. Kramer, and Solveig A. Cunningham. 2020. "Household Chores or Play Outdoors? The Intersecting Influence of Gender and School Type on Physical Activity Among Indian Adolescents." *Health Education & Behavior* 47(5):682–91. doi: 10.1177/1090198120931040.

58. Rasmussen, Charlotte Lund, Javier Palarea-Albaladejo, Adrian Bauman, Nidhi Gupta, Kirsten Nabe-Nielsen, Marie Birk Jørgensen, and Andreas Holtermann. 2018. "Does Physically Demanding Work Hinder a Physically Active Lifestyle in Low Socioeconomic Workers? A Compositional Data Analysis Based on Accelerometer Data." *International Journal of Environmental Research and Public Health; Basel* 15(7):1306. doi: http://dx.doi.org/10.3390/ijerph15071306.

59. Roengtam, Sataporn, Achmad Nurmandi, David N. Almarez, and Anwar Kholid. 2017. "Does Social Media Transform City Government? A Case Study of Three ASEAN Cities: Bandung, Indonesia, Iligan, Philippines and Phuket, Thailand." *Transforming Government: People, Process and Policy* 11(3):343–76. doi: 10.1108/TG-10-2016-0071.

60. Roof, Wade Clark. 2007. "Pluralism as a Culture: Religion and Civility in Southern California." *The ANNALS of the American Academy of Political and*

Social Science 612(1):82–99. doi: 10.1177/0002716207301061.

61. Russell, Stuart, Douglas Barrios, and Matt Andrews. 2016. "Getting the Ball Rolling: Basis for Assessing the Sports Economy." *Harvard Kennedy School Center for International Development Working Papers Series* 321: 3-31.

62. Saad-Filho, Alfredo. 2020. "From COVID-19 to the End of Neoliberalism." *Critical Sociology* 46(4–5):477–85. doi: 10.1177/0896920520929966.

63. Sae-Lim, Patipan, and Kittisak Jermsittiparsert. 2019. "Is the Fourth Industrial Revolution a Panacea? Risks toward the Fourth Industrial Revolution: Evidence in the Thai Economy." *International Journal of Innovation* 5(2):21.

64. Sayer, Liana C., and Janet C. Gornick. 2009. "Older Adults: International Differences in Housework and Leisure." *Social Indicators Research; Dordrecht* 93(1):215–18. doi: http://dx.doi.org.ccl.idm.oclc.org/10.1007/s11205-008-9376-7.

65. Sayer, Liana C. 2019. "Parenthood and Leisure Time Disparities," Chapter 8 in Contemporary Parenting and Parenthood: From News Headlines to New Research" edited by Michelle Janning. Praeger/ABC-CLIO: New York.

66. Scarinzi, Alfonsina, ed. 2015. Aesthetics and the Embodied Mind: Beyond Art Theory and the Cartesian Mind-Body Dichotomy. Vol. 73. Dordrecht: Springer Netherlands.

67. Sevilla, Almudena, J. Ignacio Gimenez-Nadal, and Jonathan I. Gershuny. n.d. "Leisure Inequality in the United States: 1965-2003." 32.

68. Smith, Lindsey P., Shu Wen Ng, and Barry M. Popkin. 2014. "No Time for the Gym? Housework and Other Non-Labor Market Time Use Patterns Are Associated with Meeting Physical Activity Recommendations among Adults in Full-Time, Sedentary Jobs." *Social Science & Medicine* 120:126–34. doi: 10.1016/j.socscimed.2014.09.010.

69. Straker, Leon, Andreas Holtermann, I.-Min Lee, Allard J. Van Der Beek, and Emmanuel Stamatakis. 2021. "Privileging the Privileged: The Public Health Focus on Leisure Time Physical Activity Has Contributed to Widening Socioeconomic Inequalities in Health." *British Journal of Sports Medicine* 55(10):525–26. doi: 10.1136/bjsports-2020-103356.

70. Sullivan, Oriel, and Tally Katz-Gerro. 2007. "The Omnivore Thesis Revisited: Voracious Cultural Consumers." European Sociological Review 23(2):123–37. doi: 10.1093/esr/jcl024.

71. Tükel, Yalçın, and Abdullah Sencer Temel. 2020. “Examining the Levels of Freedom, Life Satisfaction and Happiness Perceived by College Students in Leisure Time.” *International Journal of Research in Education and Science* 6(4):668. doi: 10.46328/ijres.v6i4.1451.

72. Van Ingen, Erik, and Koen Van Eijck. 2009. “Leisure and Social Capital: An Analysis of Types of Company and Activities.” Leisure Sciences 31(2):192–206. doi: 10.1080/01490400802686078.

73. Veal, A. J. 2016. “Leisure, Income Inequality and the Veblen Effect: Cross-National Analysis of Leisure Time and Sport and Cultural Activity.” *Leisure Studies* 35(2):215–40. doi: 10.1080/02614367.2015.1036104.

74. Walker, Gordon J., Elizabeth Halpenny, Andrew Spiers, and Jinyang Deng. 2011. “A Prospective Panel Study of Chinese-Canadian Immigrants’ Leisure Participation and Leisure Satisfaction.” *Leisure Sciences* 33(5):349–65. doi: 10.1080/01490400.2011.606776.

75. Wei, Xiang, Songshan (Sam) Huang, Monika Stodolska, and Yihua Yu. 2015. “Leisure Time, Leisure Activities, and Happiness in China: Evidence from a National Survey.” *Journal of Leisure Research* 47(5):556–76. doi: 10.18666/jlr-2015-v47-i5-6120.

76. Wohl, Hannah. 2021. *Bound by Creativity: How Contemporary Art Is Created and Judged.* Chicago,IL: University of Chicago Press.

77. White, Tabitha R., and Anne-Marie Hede. 2008. “Using Narrative Inquiry to Explore the Impact of Art on Individuals.” *Journal of Arts Management, Law, and Society; Philadelphia, Pa.* 38(1):19–35.

78. Zawadzki, Kamil. 2016. “Unemployment of Professional Artists: Empirical Evidence from Australia.” *Australian Journal of Social Issues; Sydney* 51(1):67-88,111. doi: http://dx.doi.org/10.1002/j.1839-4655.2016.tb00365.x.

Appendix A: OLS Models of Total Athletic Time Regressed on Selected Independent Variables Including Sleep

	Model 1: Effect of Art time and Sleep on Athletic Time	Model 2: Effects of Selected Independent Variables Including Sleep on Athletic Time	Model 3: Effect of Art Time on Athletic Time Controlled for Selected Independent Variables Including Sleep
Nationality: Thailand (Reference Country: America)		-.877 (.744) **-.094**	-.995 (.727) **-.107**
Age		.050 (.091) **-.053**	.063 (.091) **.067**
Gender Identity: Reference Identity: Male			
Nonbinary		-2.163 (1.160) **-.120**	-2.443* (1.075) **-.135**
Female		-2.239** (.647) **-.233**	-2.264** (.652) **-.236**
Paid Work Hours/Week (Reference of 0hrs/wk):			
1-5 hrs/wk		-.202 (1.702) **-.010**	.013 (1.748) **.001**
5-10 hrs/wk		-.606 (1.345) **-.034**	-.705 (1.305) **-.034**
10-15 hrs/wk		-2.739** (1.158) **-.140**	-2.806** (1.197) **-.143**
15-20 hrs/wk		-.194 (1.989) **-.037**	-1.272 (2.010) **-.052**

20-25 hrs/wk		-2.300 (1.289) **-.084**	-2.417 (1.250) **-.089**
25-30 hrs/wk		-.796 (2.427) **-.027**	-1.046 (2.104) **-.036**
30-35 hrs/wk		-3.930* (1.363) **-.135**	-3.819 (1.374) **-.131**
35-40 hrs/wk		-.698 (1.209) **-.058**	-.896 (1.195) **-.074**
>40 hrs/wk		-1.507 (1.201) **-.124**	-1.371 (1.199) **-.113**
Sleep	.814** (.278) **.199**		.666* (.274) .163
Currently a Student (1 = yes, 2 = no)		.470 (.711) **.051**	-.595 (.706) **-.064**
Number of Children		-1.118 (.685) **-.108**	-1.111 (.639) **-.107**
Unpaid Care Work Hrs/wk		.039 (.035) **.094**	.042 (.034) **.103**
Urbanity (Low = Urban, High = Rural)		-.278 (.159) **-.104**	-.264 (.157) **-.099**
Wifi (Reference: Has Wifi at Home):			
Only Cellular Data at Home		-.421 (.806) **-.034**	-.334 (.772) **-.027**
No Internet Access at Home		3.852* (1.599) **.150**	3.794* (1.662) **.147**

Number of Others Living in Household		-.161 (.183) **-.058**	-.178 (.182) **-.065**
Hours Per Week Doing Artistic Activities	.102* (.046) **.121**		.106* (.051) **.125**
R^2	.055	.165	.180
N	268	268	268

*$p < .05$ **$p < .01$ ***$p < .001$ (two-tailed tests)
Note: Each cell reports unstandardized coefficients, with robust standard errors in parentheses and standardized coefficients in bold.

Appendix B: List of Artistic Activities Listed by Responses

Activity	Frequency
Acrylic paint on canvas frame	1
Acting	2
Arranging collections (it's basically like floral arrangements but with chotchkes/shells??? I find it artistic at least)	1
Art walk	1
Artisanal firearms carvings	1
Arts and crafts (beading mostly)	1
Baking bread	1
Cake decoration	1
Carved glass	1
Ceramics	2
Choir	1
Cleaning	3
Collage Art	1
Color It Coloring Books	3

Coloring	3
Coloring by numbers	1
Compose music	1
Computer graphic design	1
Content writing	1
Cook	2
Cooking / baking	14
Crafting	2
Create a dressing style	1
Creative building things-like building coat racks out of bicycle parts	1
Creative Writing	2
Crocheting	1
Cut video	1
Dancing	61
Dance Thai Dance	1
Decorating	1
Digital design	1
Digital drawing	2
DIY crafts	1
DJing music	1
Draint online painting	1
Draw a caricature then keep drawing	1
Draw a cartoon character you created with your friends.	1
Draw a pencil picture and paint it with wood paints.	1
Draw a picture and write calligraphy	2
Draw a picture, describe the picture.	1
Draw about the sky	1
Draw and design characters	1

Draw cartoon	2
Drawing	135
Drawing while listening to music	2
Dress up	1
Dying clothing	1
Embroidery	2
Fiction writing	1
Flag Design	1
Flower garden trim	1
Gardening	3
Graphic design	1
Guitar	8
Home decorating	1
House Decorating	1
I'm dancing	1
Interior decoration	1
It is drawn in the form of an 8-Bit image.	1
Kalimba Playing	1
Knit bracelet	1
Knitting	1
Line drawing	2
Make a kite	1
Make dessert	1
Makeup	1
Making Music	3
Molds	1
Movie making	1
Music writing	1

Oil painting	2
Paint pictures by numbers	1
Painting	66
Painting shoes	1
Photograph the sky	1
Photography	12
Piano	3
Plastic model making	2
Plastic paint	1
Play a musical instrument	4
Play kalimba	1
Play music	2
Play thai music	1
Playing bass guitar	1
Playing drums	2
Playing music (guitar/drums/singing)	1
Playing piano and singing	1
Playing piano, guitar	1
Playing ukulele	1
Playing violin	1
Poetry	3
Pottery	1
Printmaking	1
Realistic drawing	1
Sculpture	1
Sculpture and woodworking	1
Sewing	3
Singing	47

Singing, acting, modeling	1
Sketching	1
Strum the guitar	1
Teaching dance	1
Thai dance	6
Theatre	2
Use a body or part of an organ as a mold.	1
Use an application on your phone for design work.	1
Use paint program to draw	1
Video art	1
Volunteer do art with children	1
Watercolor painting	2
Woodworking	4
Write and play music (piano, guitar, singing)	1
Writing	12
Writing (helping with screenplays/ journaling)	1
Writing poems	1
Zumba	1

Appendix C: Athletic Activities Listed by Respondents

Activity	Frequency
3 Gun Shooting Training	1
5C Club Soccer	1
Aerobics	5
Badminton	46
Baseball	1
Basketball	23
Biking	10

Bodyweight workout	1
Brisk Walking	2
Calisthenics	1
Cardio	6
Cardio sit up	1
Cardio/weights	1
Chloe Ting YouTube videos	1
Climbing	9
Crossfit	1
Cycling	6
Dance	9
Exercise	1
Exercise videos with weights and yoga	2
Fencing	1
Fitness	2
Fly yoga	2
Futsal	4
Go for a walk	3
Go to the gym	3
Golf	1
HIIT	2
Hiking	9
Horseback riding	1
Hula hoop workouts	12
Jogging	15
Jump rope	7
Kickboxing	1
Lifting Weights	54

Mountain biking	2
Muay Thai	3
Nordic skiing	1
Petanque	5
Pilates	5
Ping Pong	1
Play a game	1
Play sports	2
Playing catch	1
Playing lacrosse	1
Pomona-Pitzer Lacrosse	1
Rec league sports- kickball, bowling, etc.	1
Roller skating	1
Rollerblade	1
Rugby training	1
Running	130
Scootering	1
Short ab workout	1
Skateboarding	8
Skiing	1
Soccer	34
Spinning (indoor cycling)	2
Strength training	4
Swimming	42
Table tennis	3
Taekwondo	1
Tennis	9
Touch football	1

Track practice	1
Volleyball	17
Walk dogs	3
Walking	83
Work on my feet	1
Working out	3
Yoga	37
Youtube Cardio Workout	1
Youtube videos	1