

**EMPIRICAL INVESTIGATION OF SPORTS MANAGEMENT,  
BEHAVIOR GROWTH AND USAGE OF SPORTS APP:  
NEW LEARNING PERSPECTIVE**

**Lin C.T., Shen C.C., Mao T.Y., Yang C.C. \***

**Abstract:** The purpose of this study was to investigate the use of sports app and the influence of target orientation on sports behavior. Sports app users are research object, 510 questionnaires were sent by online questionnaire survey, effective questionnaires were 441, and the effective recovery rate was 64.50%. Data processing with descriptive statistics, independent sample t-test, single-factor variance analysis, correlation analysis and multiple stepwise regression analysis. It is observed that usage of sports applications are playing their significant role for the target orientation and target orientation. In addition, impact of sports management on behavior of the students is also examined through a 2nd sample of 329. It is found that key factors to contribute for behavioral growth are weekly hours for the sports activities, and participation in physical activities. For the motivation, key contributors from sports management are joining a local club for sports activities, weekly hours and physical activities are found to be significant determinants.

**Key words:** sports APP, use motivation, target orientation, sports behavior

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### **Introduction**

The population of mobile phones in the world is as high as 4 billion; smart phones are actively attacking the handheld application market. Therefore, a variety of apps have been extended. The industry also introduces different software for sports enthusiasts. Most sports apps have a wide range of functions and are popular with sports and fitness enthusiasts; among them, track record, data statistics and presentation, and training plan are the three functions that are most commonly used. Therefore, the combination of sports and mobile vehicles has become a marketing tool for many brands. For example, Nike launched Nike+ Run Club, Nike+ Training Club, etc. Sports App not only connects people and people, but also incorporates the concepts of smart health, medical care, and sports to tailor and record exercise habits for customers. The number of sports and fitness apps is growing at a rate of 150% every year. It can be seen that the use of sports APP

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users has gradually grown and become more and more popular. Authors like (Deci and Ryan, 1985; Frederick and Ryan, 1993; Pelletier et al., 1995; Vallerand and Losier, 1999) pointed out that motivation can be divided into two types: "intrinsic motivation" and "external motivation". The purpose of sports app's intrinsic motivation is generally to record own sports situation, change the concept of self-health and the mode of exercise. This study has examined the factor of sports management, behaviour growth and usage of sports application among the various individuals

### **Review of Literature**

Various studies have contributed in the literature covering the title of sports management, growth of behaviour and usage of sports applications. Notable contribution is presented by (Padilla and Baumer, 1994; Sirin, 2011). However, External motivation is for good health, good posture, training regular exercise habits or enhancing athletic performance and effectiveness (Myer et al., 2011; Silveira et al., 2013). This study puts the sports app as the research topic and discusses the relationship between the motivation of the mobile app users and the influence of the target orientation on the sports behavior. In addition, the factor of behavioral growth and sports activities are highly associated to each other as various reserachers have provided their theoretical and empirical facts (Fredricks and Eccles, 2002; Kaplanidou et al., 2012; Nemet et al., 2005; Ntoumanis et al., 2012). Meanwhile, sports activities are also linked for the creation of motivation (Kurtzman and Zauhar, 2005; Patrick et al., 1999; Slinger and Rudestam, 1997). In addition, this study has empirically investigated the impact of sports management on level of growth and motivation for the targeted respondents.

### **Method of the Study**

The study was conducted from 2018 December 23 to 2019 January 5, taking sports app users as research objects. Using online questionnaire method, total of 510 questionnaires were issued, and 329 valid questionnaires were collected, effective recovery rate is 64.50%. At second, various factors for the sports management are observed to analyze their empirical impact on behavior growth and increasing level of motivation. For this purpose, both descriptive and regression techniques are applied and presented (Riaz and Riaz, 2018). Next section explains the findings of the study.

### **Research Results**

It can be seen from Table 1 that use motivation's facets are all has significant ( $P < .05$ ). It indicates that sports app users have difference in use motivation with different gender.

**Table 1. Gender in use motivation independent sample t test summary table**

| Facet                     | Gender    | Number of people | Average | Standard deviation | t value | P value |
|---------------------------|-----------|------------------|---------|--------------------|---------|---------|
| Information and learning  | A. Male   | 242              | 4.29    | .60                | 6.09    | .000    |
|                           | B. Female | 87               | 3.93    | .64                |         |         |
| Practical and functional  | A. Male   | 242              | 4.45    | .55                | 5.28    | .000    |
|                           | B. Female | 87               | 4.17    | .55                |         |         |
| Physical and mental needs | A. Male   | 242              | 4.36    | .57                | 5.02    | .000    |
|                           | B. Female | 87               | 4.09    | .53                |         |         |

*(B) The difference of age in use motivation*

Age does not have a significant in all facets. It means that the sports app users do not have a difference in use motivation in different ages.

(C) The difference of every week use sports app average number in use motivation As can be seen from Table 2, cognition, affection and social behavior are all at a significant level ( $P < .05$ ).

**Table 2. ANOVA summary table of every week use sports app average number in target orientation**

| Factor          | Use sports app average number | People | Average | Standard deviation | F Value | Scheffe Post hoc comparison |
|-----------------|-------------------------------|--------|---------|--------------------|---------|-----------------------------|
| Cognition       | A.1 times                     | 95     | 3.91    | .644               | 8.26    | 3, 4, 5>1<br>5>2            |
|                 | B.2 times                     | 92     | 4.06    | .604               |         |                             |
|                 | C.3 times                     | 78     | 4.22    | .524               |         |                             |
|                 | D.4 times                     | 20     | 4.35    | .524               |         |                             |
|                 | E.5 times                     | 28     | 4.50    | .482               |         |                             |
|                 | F.6 times                     | 12     | 4.62    | .478               |         |                             |
|                 | G.7 times (Include above)     | 4      | 4.35    | .770               |         |                             |
| Affection       | A.1 times                     | 95     | 4.06    | .644               | 4.57    | 5>1                         |
|                 | B.2 times                     | 92     | 4.13    | .609               |         |                             |
|                 | C.3 times                     | 78     | 4.24    | .483               |         |                             |
|                 | D.4 times                     | 20     | 4.35    | .516               |         |                             |
|                 | E.5 times                     | 28     | 4.48    | .521               |         |                             |
|                 | F.6 times                     | 12     | 4.65    | .412               |         |                             |
|                 | G.7 times (Include above)     | 4      | 4.40    | .607               |         |                             |
| Social behavior | A.1 times                     | 95     | 3.75    | .730               | 8.66    | 3, 4, 5>1<br>4, 5>2         |
|                 | B.2 times                     | 92     | 3.89    | .695               |         |                             |
|                 | C.3 times                     | 78     | 4.09    | .549               |         |                             |
|                 | D.4 times                     | 20     | 4.26    | .595               |         |                             |
|                 | E.5 times                     | 28     | 4.38    | .632               |         |                             |
|                 | F.6 times                     | 12     | 4.65    | .472               |         |                             |
|                 | G.7 times (Include above)     | 4      | 4.31    | .664               |         |                             |

Then after Scheffe post hoc comparison, the results shows cognition, affection and social behavior were all at a significant level ( $P < .05$ ). Sports app users have difference in target orientation because of the different average number of times use sports app every week. And the average number is more; the target orientation score is higher.

**Table 3. Analysis of the relationship between target orientation and motivation**

| Items           | Information and learning | Practical and functional | Physical and mental needs |
|-----------------|--------------------------|--------------------------|---------------------------|
| Cognition       | .761*                    | .705*                    | .714*                     |
| Affection       | .714*                    | .787*                    | .765*                     |
| Social behavior | .712*                    | .592*                    | .688*                     |

\* = When significant level is 0.01, has related to significant

As can be seen from Table 3, target orientation's three facets with use motivation's three facets correlation coefficients are between .592 and .787. It has highly positively correlated. Indicates that target orientation and use motivation affect each other. As can be seen from table 4, there are two variables in the predictive function of target orientation to sports behavior. The predictive from high to low in is social behavior and cognition. These two variables can explain 10.7% of the total variation in sports behavior. Among them, the interpretation of social behavior is 9.3%, also is the most predictive variable. Second is cognition, the interpretation is 1.4%.

**Table 4. Summary table of stepwise regression analysis of target orientation to exercise behavior**

| Dependent variable | Self-variable   | R    | R2   | R2 increase | F value  |
|--------------------|-----------------|------|------|-------------|----------|
| Sports behavior    | Social behavior | .305 | .093 | .093        | 45.117** |
|                    | Cognition       | .327 | .107 | .014        | 26.221** |

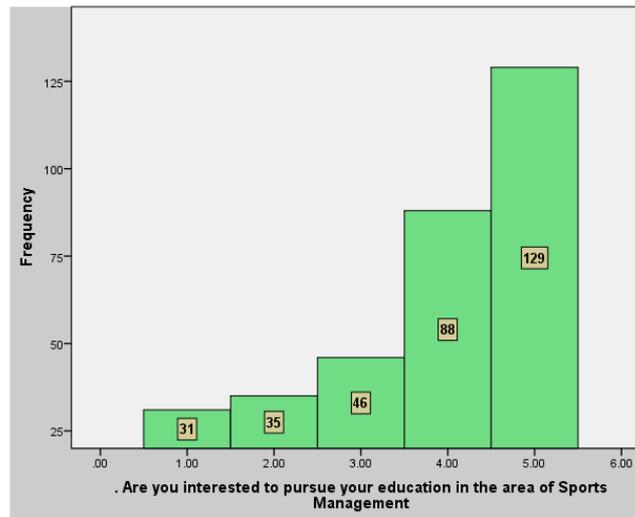
\*\* $P < .001$

Table 5 indicates the descriptive findings, for the level of interest in education for sports management. It is observed that 39.2 percent of total respondents are strongly agreed while 26.7 percent are agreed for such education and have shown their significant interest in such field.

Table 6 reflects the level of planning to pursue for the education of sports management 76 are saying that they need to improve their behavior, while 63 are saying that they need mental and physical health through sports management. Tables 7-9 indicate the findings for the descriptive trends of respondents for number of hours for sports, time for the sports, and findins a local club for sports related activites.

**Table 5. Level of Interest for Education in Sports Management**

|       |                            | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|----------------------------|-----------|---------|---------------|--------------------|
| Valid | strongly disagree          | 31        | 9.4     | 9.4           | 9.4                |
|       | disagree                   | 35        | 10.6    | 10.6          | 20.1               |
|       | neither agree nor disagree | 46        | 14.0    | 14.0          | 34.0               |
|       | agree                      | 88        | 26.7    | 26.7          | 60.8               |
|       | strongly agree             | 129       | 39.2    | 39.2          | 100.0              |
|       | Total                      | 329       | 100.0   | 100.0         |                    |



**Figure 1. Level of Interest for Education in Sports Management**

**Table 6. Why are you planning to pursue your education in the area of Sports Management/ Sports**

|                                | Frequency | Percent | Valid Percent | Cumulative Percent |
|--------------------------------|-----------|---------|---------------|--------------------|
| To advance in my career path   | 59        | 17.9    | 17.9          | 17.9               |
| To acquire new skills          | 55        | 16.7    | 16.7          | 34.7               |
| To increase my earnings        | 76        | 23.1    | 23.1          | 57.8               |
| to improve my good behavior    | 76        | 23.1    | 23.1          | 80.9               |
| for mental and physical health | 63        | 19.1    | 19.1          | 100.0              |
| Total                          | 329       | 100.0   | 100.0         |                    |

Regression findings for considering the behavior growth in positive way due to sports management are presented under table 10. It is observed that effect of all the items of sports management is found to be positive in creating behavioral growth. However, the effect through frequency of participating in sports related activities indicates a coefficient of .127 with standard error of .050. This impact is significant at 5 percent level of significance.

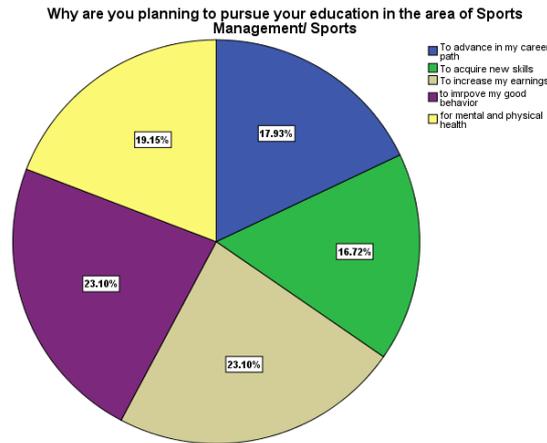


Figure 2. Planning to pursue your education in the area of Sports Management

Table 7. How many hours a week, on average, do you participate in sport or physical activity?

|       |                   | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|-------------------|-----------|---------|---------------|--------------------|
| Valid | 1-2 hours         | 29        | 8.8     | 8.8           | 8.8                |
|       | 2-3 hours         | 55        | 16.7    | 16.7          | 25.5               |
|       | 2-4 hours         | 91        | 27.7    | 27.7          | 53.2               |
|       | 4-6 hours         | 108       | 32.8    | 32.8          | 86.0               |
|       | More than 6 hours | 46        | 14.0    | 14.0          | 100.0              |
|       | Total             | 329       | 100.0   | 100.0         |                    |

Table 8. If you would like to do activities at college when would you like to do them?

|       |                        | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|------------------------|-----------|---------|---------------|--------------------|
| Valid | after breakfast        | 36        | 10.9    | 10.9          | 10.9               |
|       | lunch time             | 44        | 13.4    | 13.4          | 24.3               |
|       | in the evening         | 80        | 24.3    | 24.3          | 48.6               |
|       | after sunset           | 101       | 30.7    | 30.7          | 79.3               |
|       | at night before, sleep | 68        | 20.7    | 20.7          | 100.0              |
|       | Total                  | 329       | 100.0   | 100.0         |                    |

Table 9. Would you like more support in terms of finding a local club to join?

|       |                            | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|----------------------------|-----------|---------|---------------|--------------------|
| Valid | strongly disagree          | 35        | 10.6    | 10.6          | 10.6               |
|       | disagree                   | 65        | 19.8    | 19.8          | 30.4               |
|       | neither agree nor disagree | 71        | 21.6    | 21.6          | 52.0               |
|       | agree                      | 88        | 26.7    | 26.7          | 78.7               |
|       | strongly agree             | 70        | 21.3    | 21.3          | 100.0              |
|       | Total                      | 329       | 100.0   | 100.0         |                    |

While effect through weekly hours on growth of behavior in positive way is also found to be significant and positive at 5 percent with the coefficients of .120 and standard error of .052 respectively.

**Table 10. Regression findings for sports management and behavior**

| Model for sports management and behavior |   | Uns. Coef |            | Stan. Coef | t     | Sig. |
|--|---|-----------|------------|------------|-------|------|
|  |   | B         | Std. Error | Beta       |       |      |
| 1  | (Constant)  | .721      | .283       |            | 2.544 | .011 |
|  | Are you interested to pursue your education in the area of Sports Management?           | .080      | .048       | .087       | 1.664 | .097 |
|  | Why are you planning to pursue your education in the area of Sports Management/ Sports? | .013      | .042       | .014       | .296  | .767 |
|  | How often do you participate in sport or physical activity?                             | .127      | .050       | .127       | 2.535 | .012 |
|  | How many hours a week, on average, do you participate in sport or physical activity?    | .120      | .052       | .116       | 2.338 | .020 |
|  | If you would like to do activities at college when would you like to do them?           | .016      | .050       | .016       | .317  | .751 |
|  | Would you like more support in terms of finding a local club to join?                   | .396      | .050       | .423       | 7.958 | .000 |

a. Dependent Variable: my behavior is positively changing due to sports-related activities

**Table 11. Regression findings for sports management and motivation**

| Model for motivation and sports management |  | Uns. Coef |            | Stan. Coef | t     | Sig. |
|--|--|-----------|------------|------------|-------|------|
|  |  | B         | Std. Error | Beta       |       |      |
| 1  | (Constant)   | 1.114     | .315       |            | 3.532 | .000 |
|  | Are you interested to pursue your education in the area of Sports Management           | .027      | .053       | .030       | .514  | .607 |
|  | Why are you planning to pursue your education in the area of Sports Management/ Sports | .036      | .047       | .040       | .755  | .451 |
|  | How often do you participate in sport or physical activity?                            | .268      | .056       | .265       | 4.801 | .000 |
|  | How many hours a week, on average, do you participate in sport or physical activity    | .064      | .017       | 0.61       | 3.76  | .000 |
|  | If you would like to do activities at college when would you like to do them?          | .067      | .055       | .069       | 1.224 | .222 |
|  | Would you like more support in terms of finding a local club to join?                  | .096      | .055       | .101       | 1.732 | .084 |

a. Dependent Variable: I'm highly motivated because of sports-management

Table 11 indicates the effect of sports management on motivation of the respondents. It is found that key factors for positively affecting the level of motivation are participation in the sports activities, and weekly hours spending for the sports related activities. Some of the earlier studies have provided their findings for the relationship between sports and motivation. It is found that both level of

motivation and sports management are associated to each other (Charbonneau et al., 2001; Chelladurai and Zeigler, 1985; Ko et al., 2008; Sirin, 2011).

### Conclusion and Summary

Current situation analysis of sports app users background variables and research variables. The number of sports app users, male is higher than female. According to the Ministry of Health and Welfare's investigation conducted on Taiwan area people over the age of 15 in 2012. It was found that the male sports population was more than female, which was consistent with the results of this study. Sports app users are aged mostly in 18-30 years old. Sports app users' average use sports app are 3 times in one week is the most. In our research, exercise frequency in sports behavior is doing exercise 3 times a week is the most, has 157 people (35.6%). Therefore, we believe that the average number of use sports apps per week is 3 times was because the user doing exercise 3 times per week. The use motivation's facets, the highest score is practical and functional, the lowest is information and learning. The utility of the practical convenience, sports record and exercise scheduling provided by the sports app is the main motivation for the user to use the app. Indicates that the sports app provides functional and convenience, exercise records and exercise scheduling are the main motivations for users to use the app. We believe that most sports app users want to know and record their own exercise status, so practical and functional has the highest score (Haseeb et al., 2019). For the growth of behavior and positive learnings, sports management factors like weekly hours for the sports activities, participation in the physical activities, and joining a local club are significant determinants.

### References

- Charbonneau D., Barling J., Kelloway E.K., 2001, *Transformational leadership and sports performance: The mediating role of intrinsic motivation*, "Journal of Applied Social Psychology", 31(7).
- Chelladurai P., Zeigler E.F., 1985, *Sport management: Macro perspectives*, Sports dynamics, London, Ontario.
- Deci E.L., Ryan R.M., 1985, *The general causality orientations scale: Self-determination in personality*, "Journal of Research in Personality", 19(2).
- Fredricks J.A., Eccles J.S., 2002, *Children's competence and value beliefs from childhood through adolescence: Growth trajectories in two male-sex-typed domains*, "Developmental Psychology", 38(4).
- Frederick C.M., Ryan R.M., 1993, *Differences in motivation for sport and exercise and their relations with participation and mental health*, "Journal of Sport Behavior", 16(3).
- Haseeb M., Hussain H.I., Slusarczyk B., Jermisittiparsert K., 2019, *Industry 4.0: A Solution towards Technology Challenges of Sustainable Business Performance*, "Social Sciences", 8(5).
- Kaplanidou K., Jordan J.S., Funk D., Ridinger L.L., 2012, *Recurring sport events and destination image perceptions: Impact on active sport tourist behavioral intentions and place attachment*, "Journal of Sport Management", 26(3).

- Kurtzman J., Zauhar J., 2005, *Sports tourism consumer motivation*, "Journal of Sport Tourism", 10(1).
- Ko Y.J., Park H., Claussen C.L., 2008, *Action sports participation: consumer motivation*, "International Journal of Sports Marketing & Sponsorship", 9(2).
- Myer G.D., Faigenbaum A.D., Ford K.R., Best T.M., Bergeron M.F., Hewett T.E., 2011, *When to initiate integrative neuromuscular training to reduce sports-related injuries in youth?* "Current Sports Medicine Reports", 10(3).
- Nemet D., Barkan S., Epstein Y., Friedland O., Kowen G., Eliakim A., 2005, *Short-and long-term beneficial effects of a combined dietary-behavioral-physical activity intervention for the treatment of childhood obesity*, "Pediatrics", 115(4).
- Ntoumanis N., Taylor I.M., Thøgersen-Ntoumani C., 2012, *A longitudinal examination of coach and peer motivational climates in youth sport: Implications for moral attitudes, well-being, and behavioral investment*, "Developmental Psychology", 48(1).
- Patrick H., Ryan A.M., Alfeld-Liro C., Fredricks J.A., Huda L.Z., Eccles J.S., 1999, *Adolescents' commitment to developing talent: The role of peers in continuing motivation for sports and the arts*, "Journal of Youth and Adolescence", 28(6).
- Padilla A., Baumer D., 1994, *Big-time college sports: Management and economic issues*, "Journal of Sport and Social Issues", 18(2).
- Pelletier L.G., Tuson K.M., Fortier M.S., Vallerand R.J., Briere N.M., Blais M.R., 1995, *Toward a new measure of intrinsic motivation, extrinsic motivation, and amotivation in sports: The Sport Motivation Scale (SMS)*, "Journal of Sport and Exercise Psychology", 17(1).
- Riaz N., Riaz S., 2018, *Investment and Economic Growth: A Panel Data Analysis*, "Asian Development Policy Review", 6(1).
- Rismayadi B., Maemunah M., 2018, *Creative Economy to Increase Community Revenue Based on Tourism Object, Medalsari Village, Pangkalan District Karawang Regency*, "Journal of Accounting, Business and Finance Research", 3(1).
- Silveira P., Van De Langenberg R., Van Het Reve E., Daniel F., Casati F., De Bruin E.D., 2013, *Tablet-based strength-balance training to motivate and improve adherence to exercise in independently living older people: a phase II preclinical exploratory trial*, "Journal of Medical Internet Research", 15(8).
- Slanger E., Rudestam K.E., 1997, *Motivation and disinhibition in high risk sports: Sensation seeking and self-efficacy*, "Journal of Research in Personality", 31(3).
- Sirin E.F., 2011, *Academic procrastination among undergraduates attending school of physical education and sports: Role of general procrastination, academic motivation and academic self-efficacy*, "Educational Research and Reviews", 6(5).
- Vallerand R.J., Losier G.F., 1999, *An integrative analysis of intrinsic and extrinsic motivation in sport*, "Journal of Applied Sport Psychology", 11(1).

#### EMPIRYCZNE BADANIE ZARZĄDZANIA SPORTEM, WZROSTU ZAINTERESOWANIA I WYKORZYSTANIA APLIKACJI SPORTOWYCH: NOWA PERSPEKTYWA UCZENIA SIĘ

**Streszczenie:** Celem artykułu było zbadanie zastosowania aplikacji sportowej i wpływu orientacji na cel w zachowaniach sportowych. Obiektem badań są użytkownicy aplikacji sportowych, zbadani za pomocą ankiety internetowej w liczbie 510 kwestionariuszy, gdzie uzyskano 441, efektywny wskaźnik pozyskania danych wyniósł 64,50%. Uzyskane dane przetworzono z wykorzystaniem narzędzi statystyki opisowej, niezależnego testu t-próby,

jednoczynnikowej analizy wariancji, analizy korelacji i wielokrotnej analizy regresji krokowej. Zaobserwowano, że wykorzystanie aplikacji sportowych odgrywa znaczącą rolę w orientacji na cel. Ponadto wpływ zarządzania sportem na zachowanie uczniów jest również badany w drugiej próbie o liczebności 329. Stwierdzono, że kluczowymi czynnikami przyczyniającymi się do wzrostu zachowań są cotygodniowe godziny zajęć sportowych i udział w aktywności fizycznej. W celu motywacji kluczowi współpracownicy z kierownictwa sportowego dołączają do lokalnego klubu w celu uprawiania sportu, cotygodniowych zajęć i aktywności fizycznych.

**Słowa kluczowe:** aplikacja sportowa, wykorzystanie motywacji, orientacja na cel, zachowanie sportowe

### 体育管理，行为增长和运动应用的实证研究：新的学习视角

**摘要：**本研究的目的是研究运动应用的使用以及目标定向对运动行为的影响。体育应用用户为研究对象，在线问卷调查发送问卷510份，有效问卷441份，有效回收率为64.50%。数据处理采用描述性统计，独立样本t检验，单因素方差分析，相关分析和多元逐步回归分析。据观察，运动应用的使用对目标定向和目标定向起着重要作用。此外，体育管理对学生行为的影响也通过第二个样本来检验。发现，促进行为增长的关键因素是体育活动的每周时间和参加体育活动。为了激励，体育管理的主要贡献者正在加入当地的体育活动俱乐部，每周工作时间和体育活动被认为是重要的决定因素。

**关键词：**运动APP，运动动机，目标定向，运动行为。