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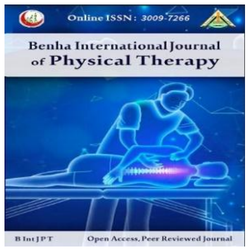

Original research

Effect of Smartphone Addiction on Hamstring Flexibility and Lower Extremity Function: A Cross-Sectional Study

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Abstract

Background: Smartphone addiction is now a common behavioral and health concern, particularly among young individuals who use their smartphones for several hours every day. Long-term smartphone use leads to incorrect postures that impair lower extremity function and hamstring flexibility, such as slouched sitting and forward head positions. **Purpose:** The purpose of the study was to investigate the effect of smartphone addiction on hamstring flexibility and lower extremity function. **Methods:** Eighty participants (36 males and 44 females) aged 18 to 30 years who reported using smartphones for more than three hours per day were recruited from Nasr Al Islam Hospital, Cairo University, and the Royal Centre. Participants were randomly assigned into two equal groups: Group A (addicted users) and Group B (non-addicted users), each comprising forty subjects. The Arabic version of the Smartphone Addiction Scale – Short Version was used to assess the level of the smartphone addiction risk. The active knee extension test was used to assess hamstring flexibility. The Clinometer + Bubble Level mobile application was used to assess knee ROM. The Lower Extremity Functional Scale, Arabic version, was used to assess functional limitations.**Results:** The results of the present study showed a strong positive correlation was found between smartphone addiction and hamstring tightness ($r = 0.753$, $p = 0.001$), and a strong negative correlation with lower extremity function ($r = -0.639$, $p = 0.001$). **Conclusion:** smartphone addiction significantly impaired hamstring flexibility and lower extremity function among young adults. Participants with smartphone addiction showed more severe muscle tension and functional impairments than those without addiction.

Keywords: Hamstring flexibility, Lower extremity function, Smartphone addiction.

Introduction

By the end of 2022, 6.65 billion people, or 83% of the world's population, owned a smartphone. Overuse of smartphones has become a global concern as a result of their ubiquitous use. According to research, pupils who use smartphones overly frequently have greater levels of anxiety and sadness. Furthermore, younger people are more susceptible to becoming dependent on smartphones, which raises the risk of physical or mental health issues. Persuasive technology is widely used in smartphone and social media application design to increase user engagement, which may lead to misuse and related health problems. Overuse of smartphones can also have major negative effects on one's health; one study identified a high correlation between smartphone addiction and the development of musculoskeletal problems[1].

Smartphone addiction (SA), defined as excessive and habitual smartphone use, has emerged as a major global behavioral and health concern. It is especially common among young adults, who make up the vast majority of smartphone users and spend many hours each day on their gadgets. Prolonged smartphone use is closely linked to bad postural patterns, such as slouched sitting and forward head posture, which put mechanical strain on the spine, particularly the lumbar area. These postural errors cause increased hamstring and trunk muscle activation, decreased muscle flexibility, and chronic musculoskeletal pain. Over time, these biomechanical and postural adaptations might result in structural and functional deficits, compromising overall physical health[2, 3, 4].

Movement between the lumbar spine, pelvis, and lower limbs is coordinated by the hamstring muscle group, which is made up of the semimembranosus, semitendinosus, and biceps femoris5. These muscles, which govern knee flexion and hip extension, are prone to shortening, particularly as a result of extended sitting in sedentary lifestyles. A cycle of muscular imbalance and discomfort can result from shortened hamstrings, which can also cause lower back stress and an anterior pelvic tilt[6].

By altering the lumbar pelvic rhythm, increased hamstring shortening may be a contributing factor to low back problems. This restriction can result in postural abnormalities and compensatory movements, which put additional strain on the spinal structures and raise the risk of low back discomfort[7].

The effects of prolonged static postures, like those frequently used when using a smartphone, are especially harmful to hamstring flexibility. Long periods of sitting or forward bending cause the hamstrings, which are vital for posture and movement, to tighten. These behaviors are commonly seen in smartphone users. It is crucial to investigate how smartphone addiction affects physical health because this decrease in hamstring flexibility has been connected to a higher risk of musculoskeletal problems[2].

Additionally, the function of the lower extremities is significantly impacted by smartphone addiction. Prolonged periods of inactivity linked to smartphone use cause the quadriceps and gluteal muscles in the lower extremities to be less activated, which lead to musculoskeletal imbalances, decreased strength, and decreased flexibility[4]. These alterations may reduce functional mobility and raise the chance of developing long-term illnesses including iliotibial band syndrome and patellofemoral pain syndrome[8].

Even though research on the psychological effects of smartphone addiction is expanding, less is known about how it affects musculoskeletal health, specifically with regard to lower extremity function and hamstring flexibility. Few studies have explicitly examined how excessive smartphone use affects lower limb biomechanics, despite the fact that previous research has linked it to chronic discomfort, muscle imbalances, and bad posture.

This study intends to close this gap by examining the direct effects of smartphone addiction on hamstring flexibility and lower extremity function, as younger people are the main smartphone users and are more likely to develop musculoskeletal problems as a result of prolonged sedentary behaviors. By doing this, it sheds important light on the negative effects excessive smartphone use has on one's physical health and emphasizes the significance of ergonomic awareness and preventative measures.

Patients and Methods

Study Design

This was a cross-sectional study design that included eighty subjects of both genders (36 males and 44 females) who reported regular smartphone use exceeding 3 hours/day, and their ages ranged from 18 to 30 years. They were recruited from Nasr al Islam Hospital, Cairo University and Academic Centre called Royal Centre and randomly distributed into two equal groups, each one had 40 patients. Group (A) included 40 subjects who were addicted to smartphone use exceeding 3 hours/day. Group (B) included 40 patients who were not addicted to smartphones.

The sample size was calculated using the G*Power software (version 3.0.10). F-test MANOVA global effect was selected. Considering a power of 0.95, an α level of 0.05 (2

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tailed) and an effect size of 0.205, two groups and response variables of two, a generated sample size of at least 80 participants was required, 40 subjects in each group.

Ethical consideration

The study protocol was approved by the institutional Ethical Committee of the Faculty of Physical Therapy, Cairo University. The purpose, rationale and benefits of this study would be explained for each subject. After that, they signed a consent form according to Helsinki protocol.

Participants

The recruited subjects were included based on the following inclusion criteria: eighty subjects from both genders aged 18-30 years and randomly distributed into two equal groups. Study group might self-report daily smartphone use exceeding 3 hours/day (addicted group). The other group reported smartphone use less than 3 hours/day (non-addicted group). All subjects had a normal body mass index (BMI) between 18.5 and 24.9 kg/m² to control for potential confounding factors related to weight. Subjects were excluded if they met one of the following criteria: history of musculoskeletal injuries or neurological disorders affecting the back or hamstrings, as these conditions could confound the effects of smartphone addiction on hamstring flexibility and lower extremity function, spinal or lower limb surgery, pregnancy, congenital deformity, leg length discrepancy more than 2 cm, neuromuscular disorders of the lower extremity, like stroke, muscular dystrophy and peripheral neuropathy, history of any malignancy or infectious disease, spinal or limb deformities or refusal to participate in protocol implementation.

Study procedures

Demographic characteristics as gender, age, weight, height, body mass index (BMI), year of study, duration of owing a smartphone, daily smartphone usage time, purpose of smartphone use in a typical day such as text messaging, social networking, watching videos and gaming were included

1.Assessment of smart phone addiction:

Arabic version of Smartphone Addiction Scale – Short Version (SAS - SV) was used to asses smart phone addiction:

This scale consists of 10 questions; these questions cover smartphone usage more than intended, inability to quit, craving or urge to use, needing more usage, presence of withdrawal symptoms, neglecting responsibilities, continuous usage despite adverse effects on health or social relationships, and the usage in risky situations. A Likert scale (ranging from 1 strongly disagree to 6 strongly agree) was applied to answer the scale questions. Positive smartphone addiction score (cut-off scores for addiction) were of ≥33 for females and ≥31 for males[9].

The participants were asked to circle the statement which most closely describes their smartphone use characteristics. The higher the score, the greater the degree of smartphone addiction. The SAS is a reliable and valid measurement tool for the evaluation of smartphone addiction[8].

2.Clinometer + Bubble level mobile application: (Figure 1)

Clinometer + Bubble level mobile application would be used to assess knee ROM. use the smartphone's built-in accelerometer, gyroscope, and camera to assess joint range of motion[10].

Clinometer displayed excellent validity when compared to the digital inclinometer for hip and knee movements (r>0.90). Additionally, Clinometer demonstrated excellent reliability (ICC > 0.90) for hip and knee sagittal plane motion. Clinometer is a portable, low-cost, valid, and reliable tool for assessing active hip and knee range of motions and can be easily incorporated into clinical settings[11].

3.Assesment of Hamstring Flexbility:

Active knee extension test (AKE): (Figure 2)

The test procedure is used to identify the hamstring muscle shortening and flexibility as follows[12]:

- **Positioning of the Subject:** The patient should be positioned in a supine position on an examination table. The hips should be in neutral alignment, and the knee to be tested should be flexed at approximately 90°.
- **Test Execution:** The subject was instructed to actively extend the knee of the affected leg,

keeping the hip and knee in a neutral position. The person should try to straighten the knee as much as they can without compensatory movements such an excessive pelvic tilt and the movement should be done slowly and carefully.

- **End of Range of Motion:** When the participant reported discomfort or was unable to extend the knee greater because of hamstring tightness, the test was assumed complete. The Clinometer + Bubble level mobile application was then used to assess the knee extension angle.
- **Results:** A decrease in the flexion angle would indicate poor hamstring flexibility, and the angle of knee extension would be noted. To avoid any confusing findings from extraneous movements, it is crucial to make sure the individual keeps the right posture during the exam.
- For hamstring shortening, the cut-off values are AKE angle >33.0° for males and >23.4° for females[13]

4.Assessment of Lower Extremity:

Lower Extremity Functional Scale (LEFS) (Arabic version):

Lower limb function is commonly evaluated using the lower extremity functional scale (LEFS), which was created by Binkley et al., in 1999[14]. It is a simple and easy-to-use tool that was created using a World Health Organization methodology. It has 20 questions with five possible numerical answers ranging from 0 to 4, and the total score can be anywhere between 0 (poor) to 80 (perfect). The LEFS has proven to be incredibly responsive and reliable[15].

Each of the 20 items in the LEFS examines how difficult it is for the participant to carry out particular daily living tasks, like running, walking, and climbing stairs. Each item is scored on a 5-point Likert scale, where:

- 0 = Extreme difficulty or unable to perform the activity.
- 4 = No difficulty.
- Participants are asked to rate the level of difficulty they experience with each of the 20 activities based on their condition at the time of assessment[16].
- **Scoring**: After completion of the questionnaire, the total score is calculated by summing the individual responses. The scores can range from 0 to 80, with higher scores indicating better functional ability. For example, a score of 80 indicates minimal functional limitations, whereas a lower score reflects greater difficulty in performing the assessed activities[16].

Statistical procedures:

Data were expressed as mean± SD. Unpaired t-test was used to compare between subjects characteristics of the two groups. Shapiro-Wilk test was used for testing normality of data distribution. One way MANOVA was used to compare measured variables between the two groups. Pearson correlation coefficient was used to find out the relationship between SA score and Hamstring flexibility, Lower extremity function. Statistical package for the social sciences computer program (version 20 for Windows; SPSS Inc., Chicago, Illinois, USA) was used for data analysis. *P* less than or equal to 0.05 was considered significant.

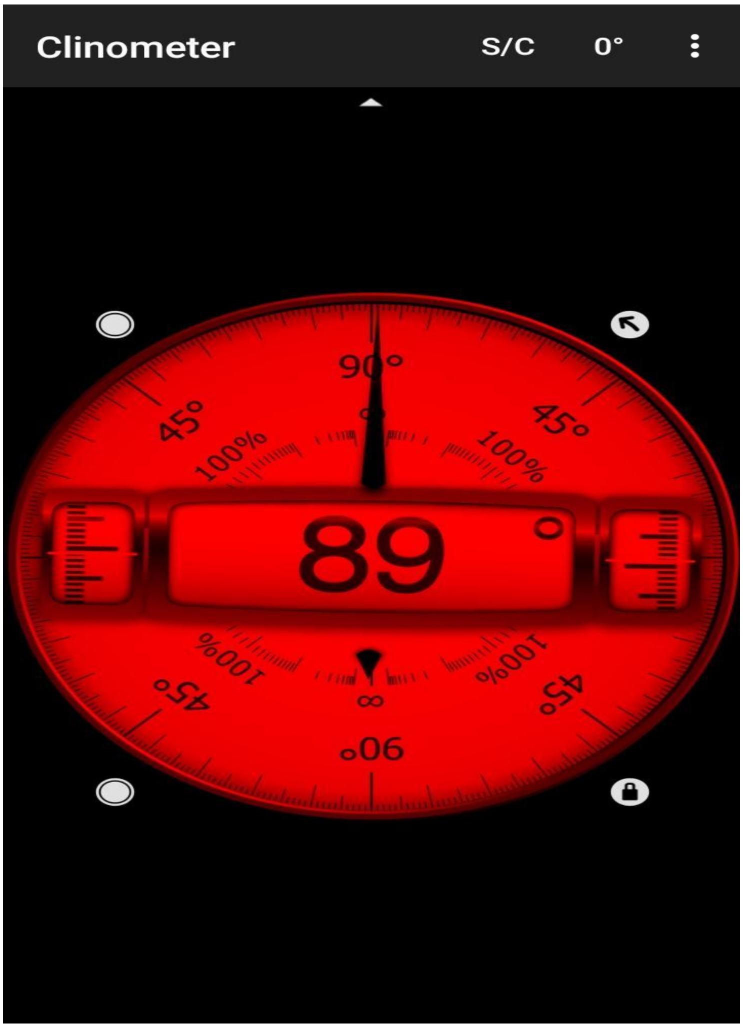

Fig. (1): Clinometer used during the study

Fig. (2): Active knee extension test to measure knee extension angle

Results

Demographic data of subjects

There were no statistically significant differences between the groups of mean age, weight, height and BMI (p=0.512, 0.982, 0.561 and 0.455), respectively. The number (%) of males of groups A and B were 15(37%) and 21 (52) and the number (%) of females 25(63%) and 19 (48%) respectively. There was no statistically significant difference in sex distribution between the groups (p=0.141) **(Table 1).**

Table (1): Subjects' characteristics of each group

Measurd variable	Group A (n=40)	Group B (n=40)	t-value	p-value
Age (years)	24.38±3.9	24.93±3.56	-0.66	0.512
Weight (kg)	63.85±10.48	63.8±8.9	0.02	9820.
Height (cm)	170.95±11.9	172.4±10.26	-0.58	5610.
BMI (kg/m^2)	21.75±1.92	21.42±2.04	0.75	0.455
Sex distribution **Males** **Females**	N (%) 15(37%) 25(63%)	N (%) 21(52%) 19(48%)	χ^2 = 2.74	0.141

Data was expressed as mean ± standard deviation or number (percentage), χ^2: chi square, p- value: significance

The mean smartphone addiction scores of Groups A and B were 48.15 ± 6.65 and 19.53 ± 5.77, respectively, with a statistically significant difference between the two groups ($p = 0.001$).

Regarding hamstring flexibility, the mean ± SD of the AKE test was 33.43 ± 5.68° in Group A and 18.13 ± 6.24° in Group B, with a mean difference of 15.3° (95% CI: 12.6–17.9). There was statistically significant difference ($p = 0.001$), showing that Group A exhibited less hamstring flexibility than Group B.

The mean lower extremity function score was 56.68 ± 8.95 in Group A and 71.23 ± 5.70 in Group B, with a mean difference of -14.55 (95% CI: -17.9 to -11.2). There was statistically significant difference ($p = 0.001$), indicating that Group A experienced more functional impairment.

A correlation study revealed a strong direct association between smartphone addiction scores and hamstring tightness ($r = 0.753$, $p = 0.001$), implying that higher addiction was related with lower flexibility. On the other hand, a strong inverse association was found between smartphone addiction ratings and LEFS ($r = -0.639$, $p = 0.001$), indicating that higher levels of addiction were related with poorer lower extremity function **(Table 2).**

Table (2): Correlation of smartphone addiction, hamstring flexibility and lower extremity function.

Variable	Group A (High Addiction) Mean ± SD	Group B (Low Addiction) Mean ± SD	Mean Difference (95% CI)	t / r value	p-value	Effect Size (η²)
Addiction Score	48.15 ± 6.65	19.53 ± 5.77	–	t = 20.54	0.001*	–
Hamstring Flexibility (°)	33.43 ± 5.68	18.13 ± 6.24	15.3 (12.6, 17.9)	–	0.001*	0.628
Lower Extremity Function (LEFS)	56.68 ± 8.95	71.23 ± 5.70	-14.55 (-17.9, -11.2)	–	0.001*	0.491
Correlation with Addiction Score	Hamstring Flexibility: r = 0.753	LEFS: r = -0.639	–	–	0.001*	–

* Data is presented as mean ± standard deviation; significant at $p < 0.05$.

Discussion

Smartphone addiction is a widespread behavioral issue, especially among younger people who use smartphones the most frequently. Musculoskeletal pain and decreased flexibility have been linked to this addiction, which can have a major impact on long-term physical health[2, 3].

Smartphone addiction and musculoskeletal health are closely related since long-term usage of smartphones can result in bad posture, which can cause lower extremity dysfunction, hamstring weakness, and muscular imbalances. Chronic discomfort and decreased movement are caused by these problems[4, 17, 18].

The current study's main goal was to find out how young individuals' hamstring flexibility and lower extremity function were affected by smartphone addiction.

Similar investigations highlighted the wider range of musculoskeletal symptoms associated with smartphone addiction, particularly affecting the cervical, thoracic, and upper limb regions, even though the lower limbs were the main focus of this study. However, the current findings are distinct and novel since no other study has specifically assessed the direct association between smartphone use and hamstring extensibility[4, 8].

In this study, the two groups' Active Knee Extension (AKE) angles and Lower Extremity Functional Scale (LEFS) scores differed statistically significantly. Group B (non-addicted) had a mean AKE angle of 18.13°6.24° (p = 0.001), while Group A (addicted) had a mean of 33.43°5.68°, showing decreased hamstring flexibility. Additionally, the addicted group's functional scores (LEFS) showed considerably reduced functional capacities (56.68°8.95 vs. 71.23°5.7; p = 0.001). According to this, using a smartphone for extended periods of time encourages static postures, particularly sitting with the knees bent, which leads to postural adaptations and muscle stiffness.

The study demonstrated a substantial negative correlation between smartphone addiction levels and lower extremity function (r = -0.639, p = 0.001), as well as a strong positive correlation between smartphone addiction scores and hamstring tightness (r = 0.753, p = 0.001). The results indicated that smartphone addiction is closely associated with decreased hamstring flexibility and lower extremity function due to prolonged inactivity and poor posture demonstrating the need for musculoskeletal health awareness and interventions among young users.

The current study's findings are consistent with growing research that connects smartphone addiction to musculoskeletal dysfunctions, namely those that impact lower extremity function and hamstring flexibility[17]. In particular, this study discovered that young individuals with smartphone addictions had roughly 21% worse lower-limb functional scores and 46% less hamstring flexibility than their peers without addiction. These results are in line with earlier studies that documented the negative consequences of extended periods of inactivity and bad posture linked to heavy smartphone use[17, 19, 20].

In line with these findings, Horata, (2022) discovered that excessive use of internet gadgets and cellphones raises the risk of musculoskeletal problems and contributes to postural dysfunctions. The underlying postural mechanisms, such as flexed hip and knee postures, are consistent with those found in our study, despite the fact that their study focused on cervical and upper body problems[2].

Additionally, there was a negative relationship with lower limb functional performance (r = -0.639, p = 0.001) and a substantial direct link between smartphone addiction ratings and hamstring tightness (r = 0.753, p = 0.001). These results are consistent with other research showing that technological addiction impairs both physical and functional abilities[3].

Concerning the consequences on core stability and posture, research by Hussin et al., (2023) demonstrated reduced core muscular endurance and higher lumbar lordosis in smartphone-addicted persons. Even though trunk posture was not measured directly in our investigation, postural abnormalities brought on by prolonged device use may be indirectly linked to the functional limits shown in the LEFS[17]. Furthermore, a prior study found that using a smartphone with a forward head posture strains the cervical musculature. Similarly, static postures that generate posterior chain tightness are known to create strain in the lower body. The body of research points to a musculoskeletal cascade that affects both the upper and lower body segments and is brought on by prolonged smartphone use[8].

Although earlier research, such that conducted by Ahmed et al. (2022) and Horata (2022), focused on dysfunctions in the upper quadrant, our findings broaden the spectrum of smartphone-related dysfunction to include performance in the lower extremities. Based on these results, there is an increasing need for ergonomic treatments, preventive measures, and awareness regarding smartphone use behaviors[2, 4].

Limitations of the Study

It is important to recognize the various limitations of this study. The cross-sectional design of this study restricted its ability to draw inferences about the causal relationship between smartphone addiction and alterations in lower extremity function or hamstring flexibility. Because the sample was small and mostly from a single age group, it was less generalizable and did not take potential gender disparities into consideration. Furthermore, possible gender-specific variations in postural adjustments and smartphone use patterns were not examined independently, which might have affected the results.

The accuracy of the responses may be impacted by potential bias resulting from the use of self-reported measures like the Lower Extremity Functional Scale (LEFS) and the Smartphone Addiction Scale (SAS), as well as the lack of complete control over confounding variables like activity level, sitting time, total screen time, and ergonomics. besides that, just one test (AKE) was used to measure hamstring flexibility, and there was no longitudinal follow-up, thus it was unable to determine if the consequences of smartphone addiction were permanent or would alter over time.

Objective physical tests (AKE, clinometer app for ROM, and Arabic LEFS version) were used in this study to partially address the significant limitations identified in previous studies, such as the lack of symptom reporting, short usage duration during assessments, or reliance on self-report questionnaires. This strengthened the validity of our findings.

Conclusion

The study's findings demonstrated that young individuals' hamstring flexibility and lower extremity function are seriously impaired by smartphone addiction. Compared to their non-addicted peers, those with smartphone addiction showed more severe functional impairments and muscle tension. As a result, it is important to acknowledge that smartphone addiction may be a risk factor for physical dysfunctions in addition to psychological ones, which calls for early detection and focused treatment.

References

1.Chen, Y.J., Hu, C.Y., Wu, W.T., Lee, R.P., Peng, C.H., Yao, T.K., Chang, C.M., Chen, H.W. and Yeh, K.T., 2025. Association of smartphone overuse and neck pain: a systematic review and meta-analysis. Postgraduate Medical Journal, p.qgae200.

2.Horata, E.T., 2022. Investigation of the effect of technology and internet addictions on the musculoskeletal system in university students during the post-pandemic period. Medical Science and Discovery, 9(12), pp.650-655.

3.Mustafaoglu, R., Yasaci, Z., Zirek, E., Griffiths, M.D. and Ozdincler, A.R., 2021. The relationship between smartphone addiction and musculoskeletal pain prevalence among young population: a cross-sectional study. The Korean journal of pain, 34(1), pp.72-81.

4.Ahmed, S., Mishra, A., Akter, R., Shah, M.H. and Sadia, A.A., 2022. Smartphone addiction and its impact on musculoskeletal pain in neck, shoulder, elbow, and hand among college going students: a cross-sectional study. Bulletin of Faculty of Physical Therapy, 27(1), p.5.

5.Pusegaonkar, R., 2023. Prevalence of hamstring tightness in physically active and inactive college going students.

6.Reis, F.J. and Macedo, A.R. 2015. Influence of hamstring tightness in pelvic, lumbar and trunk range of motion in low back pain and asymptomatic volunteers during forward bending. Asian spine journal. Aug;9(4):535-540.

7.Deshmukh, A., Nagargoje, A. and Diwate, A., 2020. Prevalence of hamstring and iliotibial band tightness in nonspecific low back pain patients: hamstring and iliotibial band tightness in nonspecific lbp. Vims Journal of Physical Therapy, 2(1), pp.28-32.

8.Khan, S., Kumari, B., Kataria, S., Sultan, R., Hakim, A., Faiz, A., Mazhar, S. and Aslam, I., 2024. Impact of Smartphone Addiction on Neck Pain Among University Students: Smartphone Addiction and Neck Pain. Journal of Health and Rehabilitation Research, 4(3).

9.Kwon, M., Lee, J.Y., Won, W.Y., Park, J.W., Min, J.A., Hahn, C., Gu, X., Choi, J.H. and Kim, D.J., 2013. Development and validation of a smartphone addiction scale (SAS). PloS one, 8(2), p.e56936.

10.Mourcou, Q., Fleury, A., Diot, B., Franco, C. and Vuillerme, N., 2015. Mobile phone-based joint angle measurement for functional assessment and rehabilitation of proprioception. BioMed research international, 2015(1), p.328142.

11.Mohammad, W.S., Elattar, F.F., Elsais, W.M. and AlDajah, S.O., 2021. Validity and Reliability of a Smartphone and Digital Inclinometer in

Measuring the Lower Extremity Joints Range of Motion. Montenegrin Journal of Sports Science & Medicine, 10(2).

12.Neto, T., Jacobsohn, L., Carita, A.I. and Oliveira, R., 2014. Reliability of the Active Knee Extension Test and the Straight Leg Raise Test. Journal of Sport Rehabilitation.

13.Yıldırım, M.Ş., Tuna, F., Kabayel, D.D. and Süt, N., 2018. The cut-off values for the diagnosis of hamstring shortness and related factors. Balkan medical journal, 35(5), pp.388-393.

14.Binkley, J.M., Stratford, P.W., Lott, S.A., Riddle, D.L. and North American Orthopaedic Rehabilitation Research Network, 1999. The Lower Extremity Functional Scale (LEFS): scale development, measurement properties, and clinical application. Physical therapy, 79(4), pp.371-383.

15.Thebuwanaarachchi, S.T., 2025. Translate and cross-culturally adapt the original English version of the lower extremity functional scale into the Sinhalese version. Journal of Arthroscopic Surgery and Sports Medicine, 6(1), pp.43-53.

16.Alnahdi, A.H., Alrashid, G.I., Alkhaldi, H.A. and Aldali, A.Z., 2016. Cross-cultural adaptation, validity and reliability of the Arabic version of the Lower Extremity Functional Scale. Disability and Rehabilitation, 38(9), pp.897-904.

17.Hussin, A.M., AbdElmaged, S.F., El-Azizi, H.M. and Ibrahim, M.M., 2023. Correlation Between Smart Phone Addiction, Back Functional Disability, Core Stability Muscles Endurance and Morphology in Young Adults. Muscles, Ligaments & Tendons Journal (MLTJ), 13(4).

18.Kapre, T.M.S. and Alexander, J.O.R., 2024. A correlation study of weak core muscles with hamstring muscles flexibility in young adults. Bulletin of Faculty of Physical Therapy, 29(1), p.79.

19.Zhao, R., Li, Y. and Craig, B., 2021. The relationship between smartphone use and musculoskeletal symptoms among university students under the influence of COVID-19. In IISE Annual Conference. Proceedings (pp. 992-997). Institute of Industrial and Systems Engineers (IISE).

20.Li, W., Cui, Y., Gong, Q. and Zhu, Z., 2022. Association of smartphone use duration with physical fitness among university students: focus on strength and flexibility. International Journal of Environmental Research and Public Health, 19(12), p.7386.

Please cite this article as follows:El-Deeb S,Yamany A,Habib A,Effect of Smartphone Addiction on Hamstring Flexibility and Lower Extremity Function: A Cross-Sectional Study. B Int J PT. 2025;3(2):303-311.DOI:10.21608/bijpt.2025.433518.1124