بسم الله الرحمن الرحيم

MONA MAGHRABY

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

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شبكة المعلومات الجامعية

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جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

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MONA MAGHRABY

Effect of Using Smart Phones on Balance Functions

Thesis

Submitted for Partial Fulfillment of Master Degree in Audiology

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Dedication

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Abb.	Full term
ACS	American Cancer Society
BBS	Biodex balance system
BDZ	Benzodiazepine
BSS	Biodex Stability System
CDMA	Code division multiple access
CDP	Computerized dynamic posturography
CES	Cervical erector spinae
COG	Center of gravity
COP	Center of pressure
CVS	Computer vision syndrome
CVS-Q	Computer vision syndrome questionnaire
DES	Digital eye strain
DSM	Diagnostic and Statistical Manual of Mental Disorders
EMR	Electromagnetic radiation
EOM	External ocular muscle
FDA	Food and drug administration
FHP	Forward head posture
GABA	Gama amino buteric acid
GPS	Global positioning system
GSM	Global System for Mobile Communications
HHD	Hand held devices
IARC	International Agency for Research on Cancer
ICNIRP	International Commission on Non-Ionizing Radiation Protection
IOP	Intraocular pressure
IR	Ionising radiation

List of Abbreviations Cont...

Abb.	Full term
ITU	International Telecommunications Union
LED	Light emitting diode
LOS	Limit of stability
MRSA	Methicillin-resistant Staphylococcus aureus
NHTSA	National Highway Traffic Safety Administration
NIR	Non-ionising radiation
NSC	National Safety Council
OSI	Overall stability index
PS	Postural stability
PVL	peripheral vestibular lesion
RF EMR	Radio frequency electromagnetic radiation
RF	Radiofrequency
SAR	Specific absorption rate
SEBT	Star Excursion Balance Test
SOT	Sensory organization test
SPSS	Statistical package for Social Science
TBUT	Tear breakup time
TDMA	Time division multiple access
VDT	visual display terminal
VNG	Video nystagmography
WBB	Wii Balance Board
WHO	World Health Organization

INTRODUCTION AND RATIONALE

In the last few years, the number of smart phones users rises progressively worldwide. They are used at anytime and anyplace as they are easy to carry and to use. Individuals are utilizing them for different tasks on a daily basis. They are used for both communication and entertainment purposes. These tasks include checking social media connections, watching videos, reading books, doing some form of work, browsing the internet and other functions ***(Rainie, 2010)***.

With the increasing use of smart phones, researches started to study their effects on health with reported physical and psychological hazards.

During use, mobile phones emit radiofrequency energy, a form of non-ionizing electromagnetic radiation, which can be absorbed by tissues close to the phone. The amount of radiofrequency energy a mobile phone user is exposed depends on many factors as the technology of the phone, the distance between the phone and the user, the extent and type of mobile phone use and the user's distance from cell phone towers ***(Volkow et al., 2011).***

In 2011, International Agency for Research on Cancer (IARC) classified mobile phone radiation as possibly carcinogenic, means that there "could be some risk" of carcinogenicity, but cancer risks for glioma and acoustic