

-
:
/ / :
/ / :

- -
- -

) ()
) (/ ± /
, (± / ,
, / ± / / ± /) ,
, (/ ± /) (/ ± /)
, (±) (±)
, (±) (±)



(.)
(.)

(. . .)

()

(.)

(.)

()

()

()

(.)

()

(.)

(.)

()

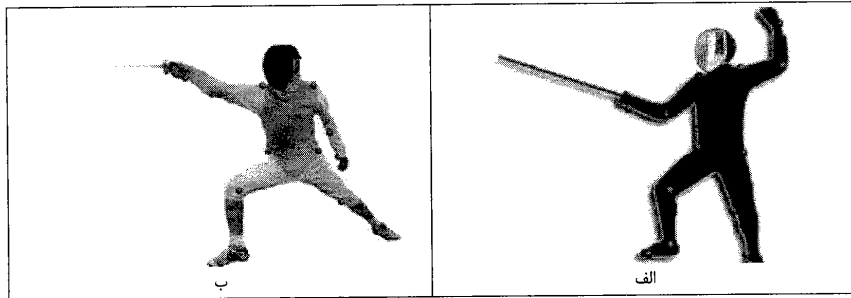


()

()

() ()

()



(

(

()

()

()

()

()

()

-
- 1 - Metatarsal I
 - 2 - Medial Malleolus
 - 3 - Medial Epicondyle of Femur
 - 4 - Anterior Superior Iliac Spine (ASIS)
 - 5 - Acromiion
 - 6 - Medial Epicondyle of Humerous

() , ()

/) , ()

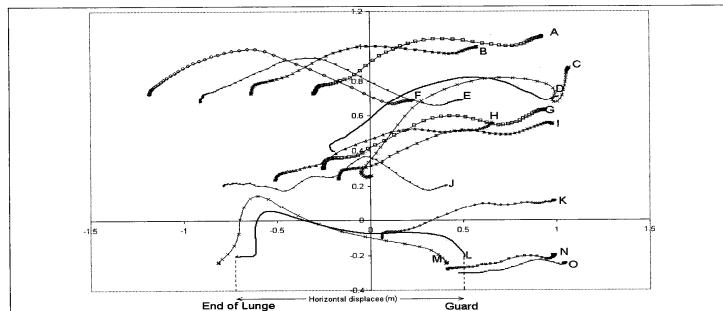
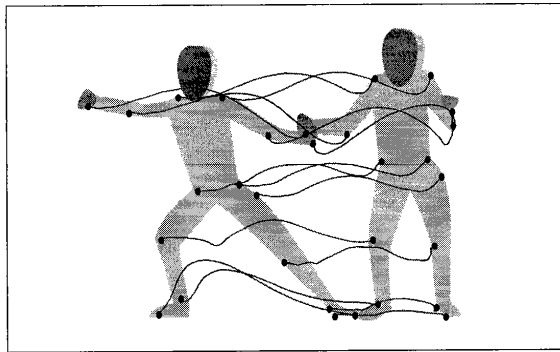
.() ()

SD ±					SD ±					/
۲۴ ± /					۲۱/۵ ± /					()
۱۸۱/۵ ± /					۱۷۹/۳ ± /					()
۷۴ ± /					۷۰/۳ ± /					()

)

(

-
- 1 - Ulnar Styloid
 - 2 - Foot
 - 3 - Shank
 - 4 - Thigh
 - 5 - Pelvis
 - 6 - Trunk
 - 7 - Arm
 - 8 - Forearm
 - 9 - On Gard
 - 10 - Kinemetrix



End of Lunge		Guard		
سمت غیر مسلح پا پای عقبی	سمت مسلح پا پای جلویی	سمت غیر مسلح پا پای جلویی	سمت مسلح پا پای عقبی	نقاط راهنما
A	B			تسارنه
D	E			آرنج
C	F			مچ دست
H	G			خارج شستروهای
I	J			نوک کتف
K	L			زانو
N	M			مچ پا
O				مشتانرس



()

H

X ()

)

(



/ ± /

/ ± /

/ ± /

/ ± /

/ ± /

/ ± /

(

)

/ ± /

/ ± /

/ ± /

/ ± /

/ ± /	/ ± /	()
/ ± /	/ ± /	()
/ ± /	/ ± /	()
/ ± /	/ ± /	()
/ ± /	/ ± /	()

)

)

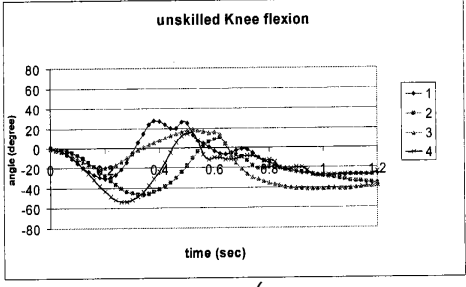
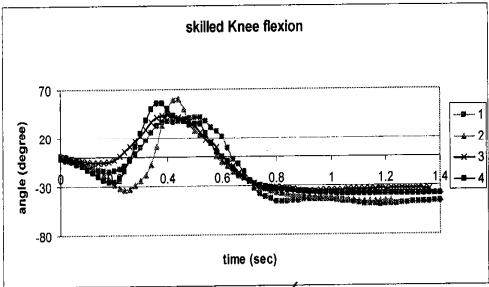
(

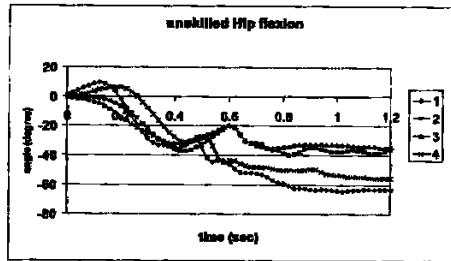
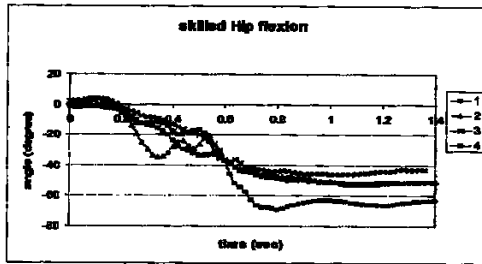
(



(L J,H)

± ± ± ± ± ± ± ±





(

(

.()

()

()

.()

()



)

(

(/) / /
(/) / /

() ()
(,)



) () () () ()

) () ()

(,)

() ()

() ()

-
-
- ()
- " () .
- ()
- "
2. Cronin. J. Mcnair P. J. , Marshall R. N.(2003). "Lunge performance and its determinants". *Journal of Sports Sciences*. 21, no 1, PP:49-57.
 3. Galea A., Dennerlein .J. (2000). "Schlager fencing biomechanics : determinates of impact force". *Annual conference of the American society of biomechanics*.
 4. Harmenberg J., Ceci R. (1991). "Fencing : Biomedical and psychological factors". *www. Sportsci. Org/ encyc / drafts/ fencing.doc*.
 5. Hassan S.E.A. Klauck J. (1998). "Kinematics of lower and upper extremities motions during the fencing lunge: results and training implications". *Abstracts from ISBS symposium XVI*.[www.isbs98. uni-konstanz.de/abstracts/Hassan.pdf](http://www.isbs98.uni-konstanz.de/abstracts/Hassan.pdf).
 6. Klauck J., Hassan S.E.A. (1998). "Lower and upper extremity coordination parameters during the fencing lunge". *Abstracts from ISBS symposium XVI*.
[www. isbs98. uni-konstanz. de/ adstracts/ klauckl.pdf](http://www.isbs98.uni-konstanz.de/adstracts/klauckl.pdf).
 7. Legnani G., Zappa B., Roi G., Galli M. (Aug 1999). "Dynamic simulation of fencing hits". *VII international symposium on computer simulation in biomachanics, Calgary 5-7 , pp:156-160.*

8. Rudy V. (1997). *"Big book of fencing"* Publisher : Rudy Volkmann ; Spiral edition, isbn 0-9668038-0-9 P:52-58.

9. Sapega AA., Minkoff J., Valsamis M., Nicholas JA. (1984). *"Musculoskeletal performance testing and profiling of elite competitive fencers"*. *Clinics sports medicine*, 3(1) : PP: 231-44.

10. Sapega AA., Minkoff J., Nicholas JA., Valsamis M. (1978). *"Sport-specific performance factor profiling : fencing as a prototype"*. *American Journal of Sports Medicine*. Vol 6, ISSUE 5 : 232-235.

11. Stewart, S.I., Kopetka, B. (2005). *"The kinematic determinants of speed in the fencing lunge"*. *Journal of sports sciences*. 02 (Part I. Biomechanics)

12. Zhang B.M., Chu D.P.K. & Hong Y. (1999). *"Biomechanical analysis of the lunge technique in elite female fencers"*. Abstracts from ISBS symposium XVII. <http://www.education.ed.ac.uk/isbs-arc99/2.html>.