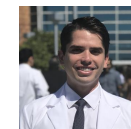




Functional adaptations in the forelimb myology of the snow leopard (*Panthera uncia*) compared to other felidae

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Introduction



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Methods

Dissection was performed on a 21 year old male snow leopard (*P. uncia*) that died of natural causes. The right and left forelimbs were dissected and anatomical data was collected including detailed descriptions, muscle mapping, photo documentation, and quantitative data (weight, length, width, and thickness). Data was compared to a female snow leopard that was dissected the previous year as well as forelimb myological descriptions from other published carnivoran species.

Results: Muscular Descriptions

-Scapular musculature (mm. rhomboideus, subscapularis, teres major, supraspinatus, infraspinatus); Enlarged scapular musculature (Figures 2-6).



Figure 2. Dorsal view of scapular musculature. Numbers indicate: 11- *m. rhomboideus cervicis* 12- *m. rhomboideus thoracis* 105- *m. rhomboideus capitis*

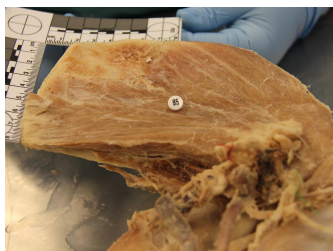


Figure 3. Ventral view of scapula. Numbers indicate: 85- *m. subscapularis*

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Results: Muscle Maps

Muscle maps indicate the origin and/or insertion of the muscles.

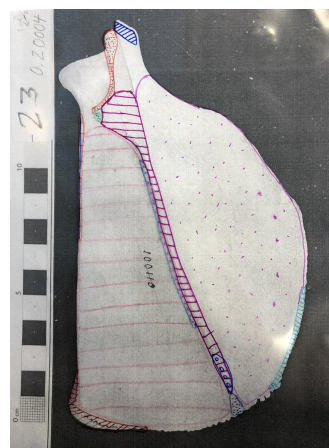


Figure 5. Dorsal view of scapula showing the extent of scapular musculature in the snow leopard.

Colors indicate: Light pink horizontal lines- *m. infraspinatus*. Dark pink dots- *m. supraspinatus*. Red horizontal lines- *m. teres major*. Brown diagonal lines- *m. rhomboideus thoracis*. Turquoise horizontal lines- *mm. rhomboideus cervicis and capitis* Blue diagonal lines- *M. Biceps brachii*. Orange dots- *m. deltoideus pars acromialis*. Green dots- *m.*

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Discussion

Scapular musculature- Scapular musculature helps with stabilization and movement of the forelimbs, as well as stabilization of the glenohumeral joint. These muscles were more robust than other felids and there was more fusion, suggesting adaptation to the environment. *P. uncia* lives in snow and travels long distances, and therefore needs larger muscles to climb snowy terrain and continue long distances (Julik et al., 2012; Viranta et al., 2016).

M. pectoralis profundus- Supports the trunk on the forelimb and is important during the pounce (Viranta et al., 2016).

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