Universitat Autònoma de Barcelona

COMPARATIVE ANATOMY OF THE SKELETON OF NON-HUMAN PRIMATES
Anatomical structure and locomotor behaviour

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Introduction

The classification of the different modes of locomotion is based on the relationship between the movements and the morphology of the skeleton of the different species[1].

The non-human primates have a wide locomotor behaviour as a result of the evolutionary adaptation that have suffered and that has led to a modification of their morphology, especially post-cranial, to better adapt to the surrounding habitats, which are arboreal and terrestrial environments, and to improve its competence[2].

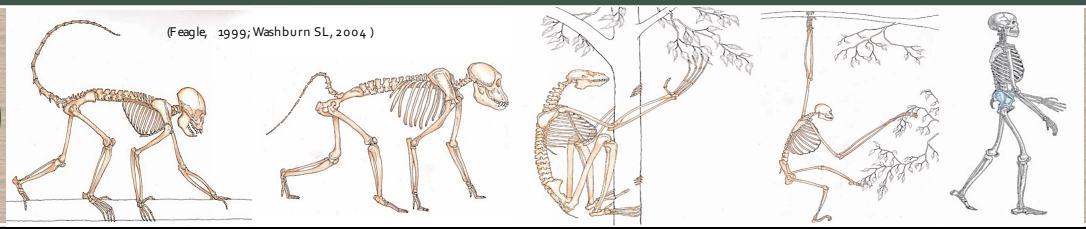
Objectives

Bibliographic review focused on :

- Analyzing the classification of locomotor behaviour and their morphological adaptations.
- Analyzing the main factors involved in the locomotive variability.

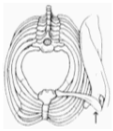
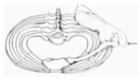
Classification

5 categories



Variability

Classification of the different species of primates based on its locomotive category and the main factors involved in its variability.

MORPHOLOGY OF THORAX	HABITAT	TAIL	5 LOCOMOTIVE CATEGORIES	SIZE	BEHAVIOURAL CONTEXT				EXAMPLES
					TRAVEL	FORAGE	ESCAPE	OTHER	
Pronograde 	Arboreal	Tail	Quadrupedalism	Small	Quadrupedal	Climbing	Leaping		Capuchin
				Large		Suspension Climbing		Facultative bipedalism	Spider monkey
			Leaping	Small Middle Large	Leaping	Leaping Climbing Quadrupedal	Leaping Climbing	Facultative bipedalism	Galago Indri Aye-Aye
			Climbing	Small Middle Large	Climbing Leaping	Climbing Leaping Quadrupedal	Climbing Leaping		Tarsier
(Feagle, 1999; Aiello and Dean, 1990)	Terrestrial	Tail	Quadrupedalism	Large	Quadrupedal	Quadrupedal	Quadrupedal	Climbing	Mandrill
		No tail	Quadrupedalism (knuckle-walking)	Big		Quadrupedal Climbing	Quadrupedal Facultative bipedalism	Suspension	Chimpanzee Gorilla
Orthograde 	Arboreal	No tail	Brachiation	Large Big	Brachiation	Brachiation	Brachiation	Climbing Quadrupedal Facultative bipedalism	Gibbon Orangutan
	Terrestrial	No tail	Bipedalism	Big	Bipedal	Bipedal	Bipedal	Climbing Suspension Quadrupedal	Human

Conclusions

- It is currently used the classification by Napier and Napier (1967).
- Anatomically, according to frequent locomotion, all primates present a primary locomotive category, which is the result of the morphological adaptation[1,4,6].
- Primates, unlike the rest of mammals, present the most wide range of locomotor behaviours and this great variability (both interspecies as intraspecies) difficults the morphological association to a single locomotive category[1].
- In primates, the great locomotive flexibility results in diverse morphological adaptations that enable them to combine multiple categories[5] .
- This locomotive variability depends on extrinsic and intrinsic factors including the body size, habitat, presence or absence of tail and the behavioural context in which it performs a locomotive category determined[1,4].

References

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