Data in Brief 50 (2023) 109520

Contents lists available at ScienceDirect

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Data Article

Meta-analysis data of skeletal muscle slow fiber content across mammalian species

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ARTICLE INFO

Article history:
Received 29 June 2023
Revised 14 August 2023
Accepted 21 August 2023
Available online 26 August 2023

Dataset link: Meta-analysis data of skeletal muscle slow fiber content across mammalian species (Reference data)

Keywords:
Muscle fiber composition
Myosin heavy chain I
MyHC I
Slow-twitch
Fiber typing
Interspecific muscle physiology comparison

ABSTRACT

Herein, the dataset generated for Queeno et al. [1] is presented and described. Mammalian skeletal muscle slow (MyHC-I) fiber composition data was collated from 269 eligible studies identified via a systematic literature search and meta-analysis, following a structure similar to PRISMA [2]. Academic search systems were queried with terms relating to mammalian skeletal muscle fiber content and reference lists of selected articles were thoroughly investigated for additional studies. Eligible studies were those that provided skeletal muscle fiber composition data from mammalian species that were not subjected to experimental manipulations. Taxonomic information, sex, age, number of individuals sampled, average body mass (kg), average slow fiber content (%) of each skeletal muscle under investigation and fiber-typing methodology were collated from eligible studies when available. Muscle fiber composition data was collected from more than 200 skeletal muscles across 174 mammalian species, which will be of value to those interested in muscle physiology, interspecific muscle comparisons, and connections between muscle physiology, taxonomy, body mass, ecomorphology and locomotor strategy (among others).

DOI of original article: 10.1016/j.cbpa.2023.111415

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https://doi.org/10.1016/j.dib.2023.109520

Specifications Table

Subject	Animal physiology
Specific subject area	Biology, muscle, anatomy, life sciences, meta-analysis, interspecific comparison, locomotion
Type of data	Tables Figures
How the data were acquired	A systematic literature search was conducted using academic search systems (Google Scholar, PubMed, and JSTOR) and library databases between June 1 2021 and November 30 2022 following a structure similar to PRISMA [2]. Reference lists of selected articles were also thoroughly investigated for additional studies. Data were extracted from the text, figures, tables, and supplementary materials of studies deemed eligible for the systematic review and meta-analysis (i.e. studies that provided skeletal muscle fiber composition data from mammalian species that were not subjected to experimental manipulations).
Data format	Secondary data Analyzed Filtered
Description of data collection	Taxonomic information, sex, age, number of individuals sampled, average body mass (kg), average slow fiber content (%) of each skeletal muscle under investigation and fiber-typing methodology were collated from eligible studies when available. If species body mass was not reported the mean was taken from published studies [3,4]. If muscle fiber content was reported from multiple sampling sites across a single muscle, the average across sampling sites was recorded.
Data source location	Eligible studies providing mammalian skeletal muscle fiber content are listed in Table 1.
Data accessibility	Repository name: Mendeley Data Data identification number: doi:10.17632/y47mj24ywy.3 Direct URL to data: https://data.mendeley.com/datasets/y47mj24ywy/3
Related research article	S.R. Queeno, P.J. Reiser, C.M. Orr, T.D. Capellini, K.N. Sterner, M.C. O'Neill, Human and African ape myosin heavy chain content and the evolution of hominin skeletal muscle, Comp. Biochem. Physiol. A Mol. Integr. Physiol. 281 (2023) 111415.

1. Value of the Data

- This is the first meta-analysis of its kind, which compiles skeletal muscle fiber composition data across 174 mammalian species into a single, usable file.
- These data will be of value to scientists interested in muscle physiology, interspecific muscle comparisons, and connections between muscle physiology, taxonomy, body mass, ecomorphology and locomotor strategy (among others).
- These data highlight certain species, taxonomic orders, and muscles for which fiber composition data is lacking and needs investigation.
- These data will spark interest in gathering muscle fiber composition data from currently unsampled (or underrepresented) species and muscles, generate interest in pursuing questions relating to muscle physiology and evolution, as well as analyses based on interspecific datasets.

2. Objective

Skeletal muscle slow fiber content varies across muscles and taxa and is one of the traits that distinguishes humans from other apes [1,5], yet no study to date has compiled these data into a single, usable format. The goal of this study was to compile mammalian skeletal muscle slow (MyHC-I) fiber composition data from published, peer-reviewed articles for interspecific comparison and analysis. This is the dataset referred to in Queeno et al. [1].

3. Data Description

A total of 2610 studies were found from academic search systems (Google Scholar, PubMed, and JSTOR) and library databases according to the selection criteria (Fig. 1). Of these, 2459 studies were selected for screening. After reading the abstract, 389 articles were selected for full-text eligibility assessment. In total, 269 studies fully met the selection criteria and were selected for inclusion in the meta-analysis (Table 1).

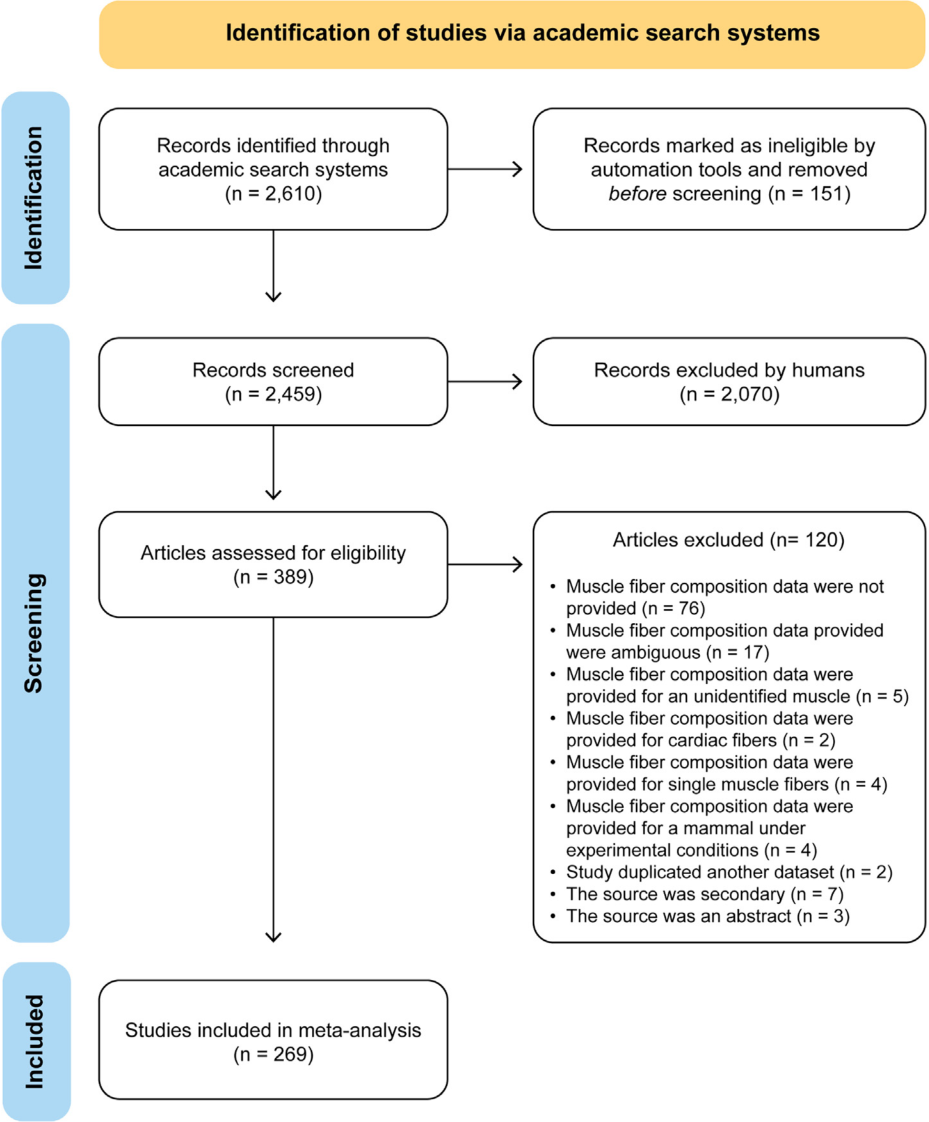

Fig. 1. PRISMA flow diagram adopted from Moher et al. [2] describing the systematic review and meta-analysis workflow.

Table 1
Citations for the 269 studies that met the selection criteria and were included in the meta-analysis.

Number	Citation
1	Acevedo, L.M., Rivero, J.L.L., 2006. New insights into skeletal muscle fibre types in the dog with particular focus towards hybrid myosin phenotypes. Cell Tissue Res 323, 283–303. https://doi.org/10.1007/s00441-005-0057-4
2	Acosta, L., Roy, R.R., 1987. Fiber-type composition of selected hindlimb muscles of a primate (cynomolgus monkey). Anat Rec 218, 136–141. https://doi.org/10.1002/ar.1092180207
3	Agostini, de Martino, L., Soltau, B., Hasselbach, W., 1991. The Modulation of the Calcium Transport by Skeletal Muscle Sarcoplasmic Reticulum in the Hibernating European Hamster. Zeitschrift für Naturforschung C 46, 1109–1126. https://doi.org/10.1515/znc-1991-11-1229
4	Aigner, S., Gohlsch, B., Hämaläinen, N., Staron, R.S., Uber, A., Wehrle, U., Pette, D., 1993. Fast myosin heavy chain diversity in skeletal muscles of the rabbit: heavy chain IId, not IIb predominates. Eur J Biochem 211, 367–372. https://doi.org/10.1111/j.1432-1033.1993.tb19906.x
5	Almeida-Silveira, M.I., Pérot, C., Pousson, M., Goubel, F., 1994. Effects of stretch-shortening cycle training on mechanical properties and fibre type transition in the rat soleus muscle. Pflug Arch Eur J Physiol 427, 289–94. https://doi.org/10.1007/BF00374536
6	Alnaqeeb, M.A., Al-Baker, E., 1994. Muscle fiber type, number and size in the EDL and soleus of Jaculus jaculus. J. Univ. Kuwait (Sci.) 21, 231–241.
7	Alvarez, G.I., Díaz, A.O., Longo, M. v., Becerra, F., Vassallo, A.I., 2012. Histochemical and Morphometric Analyses of the Musculature of the Forelimb of the Subterranean Rodent Ctenomys talarum (Octodontoidea). J Vet Med C: Anat Histol Embryol41, 317–325. https://doi.org/10.1111/j.1439-0264.2012.01137.x
8	Anapol, F.C., Jungers, W.L., 1986. Architectural and histochemical diversity within the quadriceps femoris of the brown lemur (Lemur fulvus). Am J Phys Anthropol 69, 355–375. https://doi.org/10.1002/ajpa.1330690308
9	Ansved, T., 1995. Effects of immobilization on the rat soleus muscle in relation to age. Acta Physiol Scand 154, 291–302. https://doi.org/10.1111/j.1748-1716.1995.tb09913.x
10	Arbanas, J., Klasan, G.S., Nikolić, M., Cvijanović, O., Malnar, D., 2010. Immunohistochemical analysis of the human psoas major muscle with regards to the body side and aging. Coll Antropol 34 Suppl 2, 169–73.
11	Arbanas, J., Klasan, G.S., Nikolic, M., Jerkovic, R., Miljanovic, I., Malnar, D., 2009. Fibre type composition of the human psoas major muscle with regard to the level of its origin. J Anat 215, 636–41. https://doi.org/10.1111/j.1469-7580.2009.01155.x
12	Ariano, M.A., Edgerton, V.R., Armstrong, R.B., 1973. Hindlimb muscle fiber populations of five mammals. J Histochem Cytochem 21, 51–55. https://doi.org/10.1177/21.1.51
13	Armstrong, R.B., Ianuzzo, C.D., Kunz, T.H., 1977. Histochemical and biochemical properties of flight muscle fibers in the little brown bat,Myotis lucifugus. J Comp Physiol B: Biochem Syst Environ Physiol 119, 141–154. https://doi.org/10.1007/BF00686562
14	Armstrong, R.B., Phelps, R.O., 1984. Muscle fiber type composition of the rat hindlimb. Am J Anat 171, 259–272. https://doi.org/10.1002/aja.1001710303
15	Armstrong, R.B., Saubert, C.W., Seeherman, H.J., Taylor, C.R., 1982. Distribution of fiber types in locomotory muscles of dogs. Am J Anat 163, 87–98. https://doi.org/10.1002/aja.1001630107
16	Asmussen, G., Gaunitz, U., 1989. Temperature effects on isometric contractions of slow and fast twitch muscles of various rodents–dependence on fibre type composition: a comparative study. Biomed Biochim Acta 48, S536-41.
17	Augusto, V., Padovani, C.R., Rocha Campos, G.E., 2004. Skeletal muscle fiber types in C57Bl6J mice. Braz J Morphol Sci 21, 89–94.
18	Bao, T., Han, H., Li, B., Zhao, Y., Bou, G., Zhang, X., Du, M., Zhao, R., Mongke, T., Laxima, Ding, W., Jia, Z., Dugarjaviin, M., Bai, D., 2020. The distinct transcriptomes of fast-twitch and slow-twitch muscles in Mongolian horses. Comp Biochem Physiol Part D Genomics Proteomics 33, 100649. https://doi.org/10.1016/j.cbd.2019.100649
19	Bär, A., Pette, D., 1988. Three fast myosin heavy chains in adult rat skeletal muscle. FEBS Lett 235, 153–155. https://doi.org/10.1016/0014-5793(88)81253-5
20	Beecher, G.R., Cassens, R.G., Hoekstra, W.G., Briskey, E.J., 1965. Red and White Fiber Content and Associated Post-Mortem Properties of Seven Porcine Muscles. J Food Sci 30, 969–976. https://doi.org/10.1111/j.1365-2621.1965.tb01872.x
21	Bello, M.A., Roy, R.R., Martin, T.P., Goforth, H.W., Edgerton, V.R., 1985. Axial musculature in the dolphin (Tursiops truncatus): Some architectural and histochemical characteristics. Mar Mamm Sci 1, 324–336. https://doi.org/10.1111/j.1748-7692.1985.tb00019.x
22	Bloemberg, D., Quadrilatero, J., 2012. Rapid determination of myosin heavy chain expression in rat, mouse, and human skeletal muscle using multicolor immunofluorescence analysis. PLoS One 7. https://doi.org/10.1371/journal.pone.0035273

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Number	Citation
23	Bonington, A., Whitmore, I., Mahon, M., 1987. A histological and histochemical study of the cricopharyngeus muscle in the guinea-pig. J Anat 153, 151–61.
24	Boyd-Clark, L.C., Briggs, C.A., Galea, M.P., 2001. Comparative histochemical composition of muscle fibres in a pre- and a postvertebral muscle of the cervical spine. J Anat 199, 709–716. https://doi.org/10.1017/S0021878201008706
25	Brandstetter, A.M., Picard, B., Geay, Y., 1998. Muscle fibre characteristics in four muscles of growing bulls I. Postnatal differentiation, Livest Prod Sci.
26	Brasseur, J.E., Curtis, R.L., Mellender, J.W., Rimm, A.A., Melvin, J.L., Sulaiman, A.R., 1987. Systematic distribution of muscle fiber types in the medical gastrocnemius of the laboratory mouse: A morphometric analysis. Anat Rec 218, 396–401. https://doi.org/10.1002/ar.1092180407
27	Braund, K.G., Amling, K.A., Mehta, J.R., Steiss, J.E., Scholz, C., 1995. Histochemical and morphometric study of fiber types in ten skeletal muscles of healthy young adult cats. Am J Vet Res 56, 349–57.
28	Braund, K.G., Mcguire, J.A., Lincoln, C.E., 1982. Observations on Normal Skeletal Muscle of Mature Dogs: A Cytochemical, Histochemical, and Morphometric Study, Vet Pathol.
29	Brigham, R.M., Ianuzzo, C.D., Hamilton, N., Fenton, M.B., 1990. Histochemical and biochemical plasticity of muscle fibers in the little brown bat (Myotis lucifugus). J Comp Physiol B: Biochem Syst Environ Physiol 160, 183–186. https://doi.org/10.1007/BF00300951
30	Burke, R.E., 1967. Motor unit types of cat triceps surae muscle. J Physiol 193, 141–160. https://doi.org/10.1113/jphysiol.1967.sp008348
31	Burke, R.E., Levine, D.N., Salcman, M., Tsairis, P., 1974. Motor units in cat soleus muscle: physiological, histochemical and morphological characteristics. J Physiol 238, 503–514. https://doi.org/10.1113/jphysiol.1974.sp010540
32	Burke, R.E., Levine, D.N., Tsairis, P., Zajac, F.E., 1973. Physiological types and histochemical profiles in motor units of the cat gastrocnemius. J Physiol 234, 723–748. https://doi.org/10.1113/jphysiol.1973.sp010369
33	Burkholder, T.J., Fingado, B., Baron, S., Lieber, R.L., 1994. Relationship between muscle fiber types and sizes and muscle architectural properties in the mouse hindlimb. J Morphol 221, 177–190. https://doi.org/10.1002/jmor.1052210207
34	Carlson, H., 1978. Histochemical fiber composition of lumbar back muscles in the cat. Acta Physiol Scand 103, 198–209. https://doi.org/10.1111/j.1748-1716.1978.tb06207.x
35	Casinos, A., Milne, N., Jouffroy, F.K., Médina, M.F., 2016. Muscle fibre types in the reduced forelimb and enlarged hindlimb of the quokka (Setonix brachyurus, Macropodidae). Aust J Zool 64, 277–284. https://doi.org/10.1071/ZO15055
36	Cebesoy, S., 2009. Morphology and histochemistry of primary flight muscles in Rhinolophus mehelyii. Afr J Biotechnol 8, 1160–1164.
37	Cebesoy, S., Ayvali, C., 2003. Morphology and histochemistry of primary flight muscles in Myotis myotis 16, 245–252.
38	Chanaud, C.M., Pratt, C.A., Loeb, G.E., 1991. Functionally complex muscles of the cat hindlimb. Exp Brain Res 85, 300–313. https://doi.org/10.1007/BF00229408
39	Chang, H., Jiang, S., Ma, X., Peng, X., Zhang, J., Wang, Z., Xu, S., Wang, H., Gao, Y., 2018. Proteomic analysis reveals the distinct energy and protein metabolism characteristics involved in myofiber type conversion and resistance of atrophy in the extensor digitorum longus muscle of hibernating Daurian ground squirrels. Comp Biochem Physiol Part D Genomics Proteomics 26, 20–31. https://doi.org/10.1016/j.cbd.2018.02.002
40	Choi, H., Selpides, P.-J.I., Nowell, M.M., Rourke, B.C., 2009. Functional overload in ground squirrel plantaris muscle fails to induce myosin isoform shifts. Am J Physiol Regul Integr Comp Physiol 297, R578-86. https://doi.org/10.1152/ajpregu.00236.2009
41	Chopard, A., Pons, F., Marini, J.F., 2001. Cytoskeletal protein contents before and after hindlimb suspension in a fast and slow rat skeletal muscle. Am J Physiol Regul Integr Comp Physiol 280, R323-30. https://doi.org/10.1152/ajpregu.2001.280.2.R323
42	Collatos, T.C., Edgerton, V.R., Smith, J.L., Botterman, B.R., 1977. Contractile properties and fiber type compositions of flexors and extensors of elbow joint in cat: implications for motor control. J Neurophysiol 40, 1292–1300. https://doi.org/10.1152/jn.1977.40.6.1292
43	Cordonnier, C., Stevens, L., Picquet, F., Mounier, Y., 1995. Structure-function relationship of soleus muscle fibres from the rhesus monkey. Pflug Arch Eur J Physiol 430, 19–25. https://doi.org/10.1007/BF00373835
44	Cornachione, A.S., Benedini-Elias, P.C.O., Polizello, J.C., Carvalho, L.C., Mattiello-Sverzut, A.C., 2011. Characterization of fiber types in different muscles of the hindlimb in female weanling and adult wistar rats. Acta Histochem Cytochem 44, 43–50. https://doi.org/10.1267/ahc.10031
45	Cotton, C.J., Harlow, H.J., 2010. Avoidance of Skeletal Muscle Atrophy in Spontaneous and Facultative Hibernators. Physiol Biochem Zool 83, 551–560. https://doi.org/10.1086/650471

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Table 1 (*continued*)

Number	Citation
46	Curry, J.W., Hohl, R., Noakes, T.D., Kohn, T.A., 2012. High oxidative capacity and type IIx fibre content in springbok and fallow deer skeletal muscle suggest fast sprinters with a resistance to fatigue. J Exp Biol 215, 3997–4005. https://doi.org/10.1242/jeb.073684
47	Dada, S., Henning, F., Feldmann, D.C., Kohn, T.A., 2018. Baboon (Papio ursinus) single fibre contractile properties are similar to that of trained humans. J Muscle Res Cell Motil 39, 189–199. https://doi.org/10.1007/s10974-019-09509-x
48	de A. Braga, S., G. F. Padilha, F., M. R. Ferreira, A., 2016. Evaluation of Muscle Fiber Types in German Shepherd Dogs of Different Ages. Anat Rec 299, 1540–1547. https://doi.org/10.1002/ar.23464
49	de Diego, M., Casado, A., Gómez, M., Martín, J., Pastor, J.F., Potau, J.M., 2020. Structural and molecular analysis of elbow flexor muscles in modern humans and common chimpanzees. Zoomorphology 139, 277–290. https://doi.org/10.1007/s00435-020-00482-5
50	Delp, M.D., Duan, C., 1996. Composition and size of type I, IIA, IID/X, and IIB fibers and citrate synthase activity of rat muscle. J Appl Physiol 80, 261–270. https://doi.org/10.1152/jappl.1996.80.1.261
51	Dennington, S., Baldwin, J., 1988. Biochemical Correlates of Energy-Metabolism in Muscles Used to Power Hopping by Kangaroos. Aust J Zool 36, 229. https://doi.org/10.1071/ZO9880229
52	Donselaar, Y., Eerbeek, O., Kernell, D., Verhey, B.A., 1987. Fibre sizes and histochemical staining characteristics in normal and chronically stimulated fast muscle of cat. J Physiol 382, 237–54. https://doi.org/10.1113/jphysiol.1987.sp016365
53	Edgerton, V.R., Barnard, R.J., Peter, J.B., Maier, A., Simpson, D.R., 1975a. Properties of immobilized hind-limb muscles of the Galago senegalensis. Exp Neurol 46, 115–131. https://doi.org/10.1016/0014-4886(75)90036-9
54	Edgerton, V.R., Smith, J.L., Simpson, D.R., 1975b. Muscle fibre type populations of human leg muscles. Histochem J 7, 259–266. https://doi.org/10.1007/BF01003594
55	Edström, L., Lindquist, C., 1973. Histochemical fiber composition of some facial muscles in the cat in relation to their contraction properties. Acta Physiol Scand 89, 491–503. https://doi.org/10.1111/j.1748-1716.1973.tb05543.x
56	Edström, L., Nyström, B., 1969. Histochemical types and sizes of fibres in normal human muscles. A biopsy study. Acta Neurol Scand 45, 257–69. https://doi.org/10.1111/j.1600-0404.1969.tb01238.x
57	Egginton, S., 1990. Numerical and areal density estimates of fibre type composition in a skeletal muscle (rat extensor digitorum longus). J Anat 168, 73–80.
58	Eizema, K., van den Burg, M., Kiri, A., Dingboom, E.G., van Oudheusden, H., Goldspink, G., Weijs, W.A., 2003. Differential expression of equine myosin heavy-chain mRNA and protein isoforms in a limb muscle. J Histochem Cytochem 51, 1207–16. https://doi.org/10.1177/002215540305100911
59	Eizema, K., van den Burg, M.M.M., de Jonge, H.W., Dingboom, E.G., Weijs, W.A., Everts, M.E., 2005. Myosin heavy chain isoforms in equine gluteus medius muscle: comparison of mRNA and protein expression profiles. J Histochem Cytochem 53, 1383–90. https://doi.org/10.1369/jhc.4A6609.2005
60	Eng, C.M., Smallwood, L.H., Rainiero, M.P., Lahey, M., Ward, S.R., Lieber, R.L., 2008. Scaling of muscle architecture and fiber types in the rat hindlimb. J Exp Biol 211, 2336–2345. https://doi.org/10.1242/jeb.017640
61	English, A.W., Letbetter, W.D., 1982. A histochemical analysis of identified compartments of cat lateral gastrocnemius muscle. Anat Rec 204, 123–30. https://doi.org/10.1002/ar.1092040205
62	Enríquez, V., Granados, S., Arias, M.P., Calderón, J.C., 2015. Muscle Fiber Types of Gluteus Medius in the Colombian Creole Horse. J Equine Vet Sci 35, 524–530. https://doi.org/10.1016/j.jevs.2015.02.010
63	Essén-Gustavsson, B., Fjelkner-Modig, S., 1985. Skeletal muscle characteristics in different breeds of pigs in relation to sensory properties of meat. Meat Sci 13, 33–47. https://doi.org/10.1016/S0309-1740(85)80003-6
64	Essén-Gustavsson, B., Rehbinder, C., 1985. Skeletal muscle characteristics of reindeer (Rangifer tarandus L.). Comp Biochem Physiol A Physiol 82, 675–679. https://doi.org/10.1016/0300-9629(85)90450-5
65	Feng, X., Zhang, T., Xu, Z., Choi, S.J., Qian, J., Furdui, C.M., Register, T.C., Delbono, O., 2012. Myosin heavy chain isoform expression in the Vastus Lateralis muscle of aging African green vervet monkeys. Exp Gerontol 47, 601–607. https://doi.org/10.1016/j.exger.2012.05.007
66	Fitts, R.H., Bodine, S.C., Romatowski, J.G., Widrick, J.J., 1998. Velocity, force, power, and Ca2+ sensitivity of fast and slow monkey skeletal muscle fibers. J Appl Physiol 84, 1776–87. https://doi.org/10.1152/jappl.1998.84.5.1776
67	Foehring, R.C., Hermanson, J.W., 1984. Morphology and Histochemistry of Flight Muscles in Free-Tailed Bats, Tadarida brasiliensis. J Mammal 65, 388–394. https://doi.org/10.2307/1381084
68	Ford, D.M., Bagnall, K.M., McFadden, K.D., Reid, D.C., 1986. A Comparison of Muscle Fiber Characteristics at Different Levels of the Vertebral Column in the Rhesus Monkey. Cells Tissues Organs 126, 163–166. https://doi.org/10.1159/000146208

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Table 1 (*continued*)

Number	Citation
69	Francisco, C.L., Jorge, A.M., Dal-Pai-Silva, M., Carani, F.R., Cabeço, L.C., Silva, S.R., 2011. Muscle fiber type characterization and myosin heavy chain (MyHC) isoform expression in Mediterranean buffaloes. Meat Sci 88, 535–541. https://doi.org/10.1016/j.meatsci.2011.02.007
70	Fuentes, I., Cobos, A.R., Segade, L.A.G., 1998. Muscle fibre types and their distribution in the biceps and triceps brachii of the rat and rabbit. J Anat 192, 203–210. https://doi.org/10.1046/j.1469-7580.1998.19220203.x
71	Gao, Y.F., Wang, J., Wang, H.P., Feng, B., Dang, K., Wang, Q., Hinghofer-Szalkay, H.G., 2012. Skeletal muscle is protected from disuse in hibernating dauria ground squirrels.Comp Biochem Physiol A Mol Integr Physiol 161, 296–300. https://doi.org/10.1016/j.cbpa.2011.11.009
72	Gellman, K.S., Bertram, J.E.A., Hermanson, J.W., 2002. Morphology, histochemistry, and function of epaxial cervical musculature in the horse (Equus caballus). J Morphol 251, 182–194. https://doi.org/10.1002/jmor.1082
73	Gibson, M.C., Schultz, E., 1982. The distribution of satellite cells and their relationship to specific fiber types in soleus and extensor digitorum longus muscles. Anat Rec 202, 329–337. https://doi.org/10.1002/ar.1092020305
74	Gillespie, M.J., Gordon, T., Murphy, P.R., 1987. Motor units and histochemistry in rat lateral gastrocnemius and soleus muscles: evidence for dissociation of physiological and histochemical properties after reinnervation. J Neurophysiol 57, 921–937. https://doi.org/10.1152/jn.1987.57.4.921
75	Goldstein, B., 1971. Heterogeneity of Muscle Fibers in Some Burrowing Mammals. J Mammal 52, 515–527. https://doi.org/10.2307/1378586
76	Gómez, M., Casado, A., de Diego, M., Pastor, J.F., Potau, J.M., 2022. Anatomical and molecular analyses of the deltoid muscle in chimpanzees (Pan troglodytes) and modern humans (Homo sapiens): Similarities and differences due to the uses of the upper extremity. Am J Primatol 84. https://doi.org/10.1002/ajp.23390
77	Gonyea, W.J., Ericson, G.C., 1977. Morphological and histochemical organization of the flexor carpi radialis muscle in the cat. Am J Anat 148, 329–344. https://doi.org/10.1002/aja.1001480304
78	Gorza, L., 1990. Identification of a novel type 2 fiber population in mammalian skeletal muscle by combined use of histochemical myosin ATPase and anti-myosin monoclonal antibodies. J Histochem Cytochem 38, 257–265. https://doi.org/10.1177/38.2.2137154
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80	Goto, M., Kawai, M., Nakata, M., Itamoto, K., Miyata, H., Ikebe, Y., Tajima, T., Wada, N., 2013b. Distribution of muscle fibers in skeletal muscles of the cheetah (Acinonyx jubatus). Mamm Biol 78, 127–133. https://doi.org/10.1016/j.mambio.2012.07.001
81	Gotoh, T., 2003. Histochemical properties of skeletal muscles in Japanese cattle and their meat production ability, Anim Sci J.
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269	Żochowska-Kujawska, J., Sobczak, M., Lachowicz, K., 2009. Comparison of the texture, rheological properties and myofibre characteristics of SM (Semimembranosus) muscle of selected species of game animals. Pol J Food Nutr Sci 59, 243–246.

Eligible studies providing mammalian skeletal muscle fiber content are listed alphabetically in Table 1.

Fig. 2 The 269 eligible studies included in the meta-analysis were published between 1965 and 2023 (Fig. 2). Interest in, and ability to, determine the fiber composition of different skeletal muscles from various mammalian species increased in the 1970s. The earliest included study to use the histochemical assay for myofibrillar ATPase activity (mATPase) to determine fiber type across multiple skeletal muscles was published in 1969 [6]. Sodium dodecyl-sulfate polyacrylamide gel electrophoresis (SDS-PAGE) was first used in 1981 [7,8], and immunohistochemistry with myosin antibodies (mABs) was first used in 1990 [9]. The first RNA-based method to determine skeletal muscle fiber composition, reverse transcription-polymerase chain reaction (RT-PCR), was first used in 2003 [10].

Table 2 is the dataset behind Figs. 3 and 4.

From these 269 eligible studies, skeletal muscle fiber composition data was collated from 174 species belonging to class Mammalia (Fig. 3). These species represent 15 unique taxonomic orders, 58 families, and 132 genera.

Within class Mammalia, orders Rodentia, Primates, and Artiodactyla are the most highly represented in the literature, whereas orders Cingulata, Dasyuromorphia, Proboscidea, and Scandentia are the least represented (Fig. 4A). Similarly, orders Rodentia, Primates, and Artiodactyla have the most diverse representation in the literature in terms of number of unique families (Fig. 4B), genera (Fig. 4C), and species (Fig. 4D).

Table 3 quantifies the number of studies used in the meta-analysis that did not report the number of individuals from which skeletal muscle fiber composition data was recorded ($n = 22$)

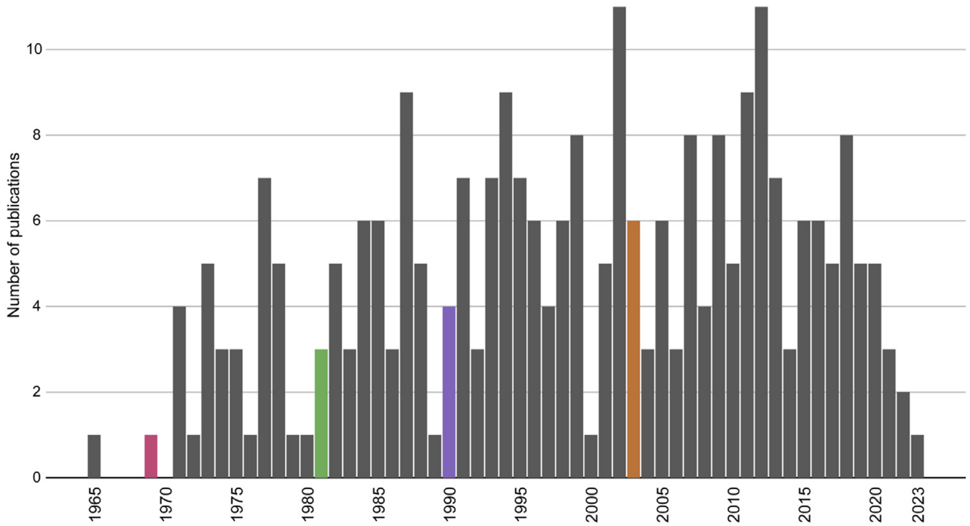

Fig. 2. Number of mammalian skeletal fiber composition publications included in the meta-analysis per year. Colored bars denote the first appearance of each fiber-typing method: mATPase (raspberry), SDS-PAGE (green), mABs (purple), and RT-PCR (orange).

Table 2
Taxonomic composition, diversity, and representation of each of the 15 mammalian orders present in the 269 eligible studies.

Order	No. of families	No. of genera	No. of species	No. of publications
Artiodactyla	9	21	26	53
Carnivora	8	17	22	36
Chiroptera	6	12	16	8
Cingulata	1	1	1	1
Dasyuromorphia	1	1	1	1
Didelphimorphia	1	3	3	4
Diprotodontia	2	5	8	4
Eulipotyphla	2	7	10	6
Lagomorpha	2	2	2	7
Perissodactyla	1	1	3	13
Pilosa	2	2	2	3
Primates	11	35	50	64
Proboscidea	1	1	1	1
Rodentia	10	23	26	66
Scandentia	1	1	3	1

or the body mass of the individuals from which skeletal muscle fiber composition data was recorded ($n = 136$). Sixteen of the 269 eligible studies reported neither the number of individuals nor the body mass of individuals from which skeletal muscle fiber composition data was recorded.

Fourteen species across 6 taxonomic orders had skeletal muscle fiber composition data from 50 or more individuals (Fig. 5). Five species had skeletal muscle fiber composition data from 100 or more individuals: pigs ($n = 825$), humans ($n = 338$), horses ($n = 193$), rats ($n = 168$), and cats ($n = 108$).

154 species had skeletal muscle fiber composition data from 50 or fewer individuals (Fig. 6). Of those, 33 species had skeletal muscle fiber composition data from only one individual: African savanna elephant, black lemur, black-tufted marmoset, bonobo, brush-tailed bettong, caracal, Dsinezumi shrew, Egyptian fruit bat, emperor tamarin, golden-headed lion tamarin, gray-

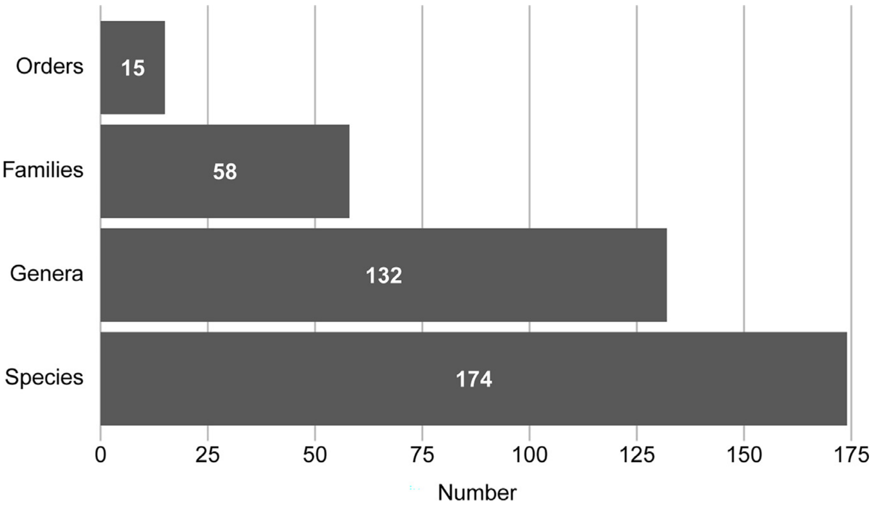

Fig. 3. Taxonomic representation across the 269 eligible mammalian fiber composition studies included in the meta-analysis.

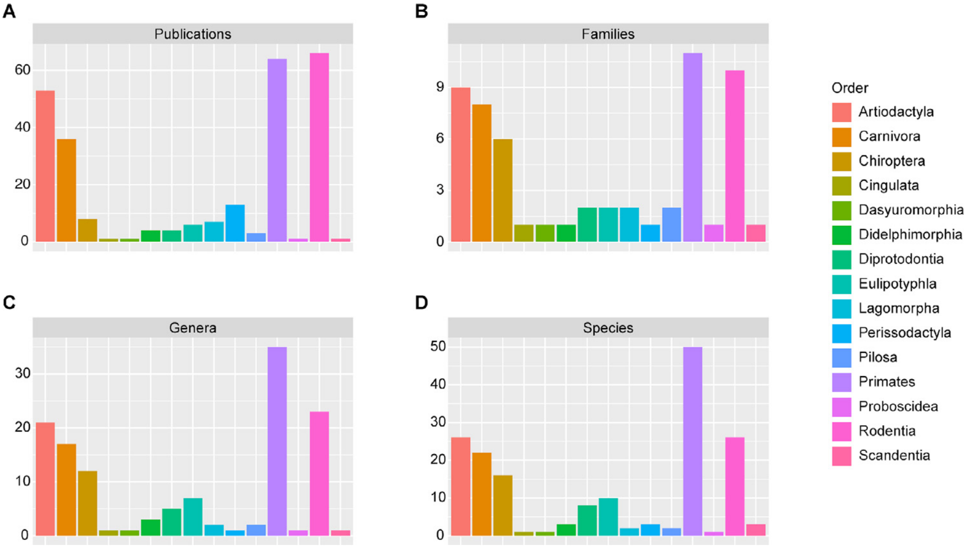

Fig. 4. Study representation and taxonomic diversity across the 15 mammalian orders. (A) Number of eligible studies/publications per taxonomic order. (B) Number of taxonomic families per taxonomic order. (C) Number of genera per taxonomic order. (D) Number of species per taxonomic order.

Table 3
Number of eligible studies missing relevant data for meta-analysis.

Variable	No. of publications
Did report number of individuals sampled	247
Did **not** report number of individuals sampled	22
Did report body mass of sampled individuals	133
Did **not** report body mass of sampled individuals	136
Did **not** report either number of individuals sampled or body mass of sampled individuals	16

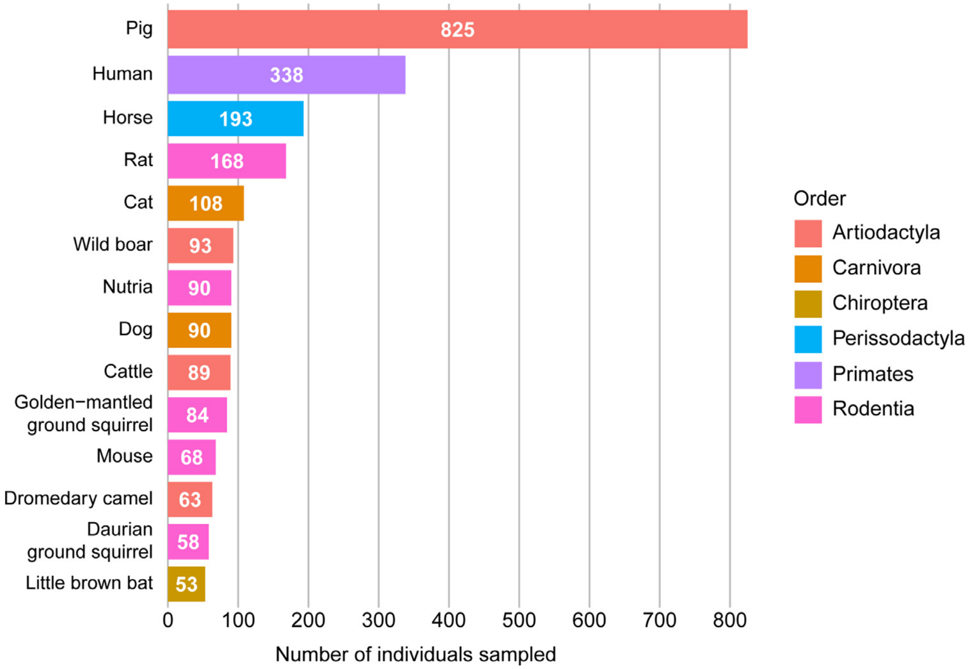

Fig. 5. Species with greater than 50 sampled individuals.

cheeked mangabey, Himalayan black bear, Japanese water shrew, Lar gibbon, mandrill, Mindanao treeshrew, northern giraffe, Pacific white-sided dolphin, red kangaroo, red panda, red ruffed lemur, sea otter, small Japanese mole, stone marten, swamp wallaby, Tammar wallaby, tufted capuchin, western pygmy marmoset, white-crowned mangabey, white-headed marmoset, white-lipped tamarin, and yellow-cheeked gibbon.

The 174 species included in the meta-analysis ranged in average body mass from 0.0019 kg (bumblebee bat, *Craseonycteris thonglongyai*) to 70,000 kg (fin whale, *Balaenoptera physalus*) (Fig. 7).

Most species providing skeletal muscle fiber composition data are terrestrial (n = 103), whereas marine (n = 11) species are the least represented (Fig. 8). *Arboreal* species are those that spend most of the time in the trees and locomote via arboreal quadrupedalism, vertical clinging and leaping, brachiation, suspension, and other scansorial activities. *Marine* species are those that spend most of the time in the ocean and locomote via swimming, diving, and other natatorial activities. *Terrestrial* species are those that spend most of the time on the ground and locomote via terrestrial quadrupedalism, bipedalism, or saltation, and may be fossorial, semi-fossorial, cursory, ambulatory, graviportal, generalized, amphibious, or scansorial. *Volant* species are those that primarily locomote via powered flight.

Skeletal muscle fiber composition data was provided for 238 muscles across 11 broad anatomical compartments: head, neck, shoulder, brachium (i.e. upper arm), antebrachium (i.e. lower arm), hand, trunk (i.e. back and abdominal musculature), pelvic/gluteal, thigh, leg and tail. Table 4 quantifies the number of unique skeletal muscle sampling terms (excluding differences in anatomical sampling location from the same muscle such as "superficial," "deep," "proximal," "distal," etc.) per anatomical compartment, as well as the number of data points per anatomical compartment. The anatomical compartment with the greatest number of unique skeletal muscle sampling terms is the trunk ($n = 41$). The most heavily sampled anatomical compartments are the leg ($n = 684$) and thigh ($n = 661$), followed by the shoulder ($n = 340$) and trunk ($n = 331$).

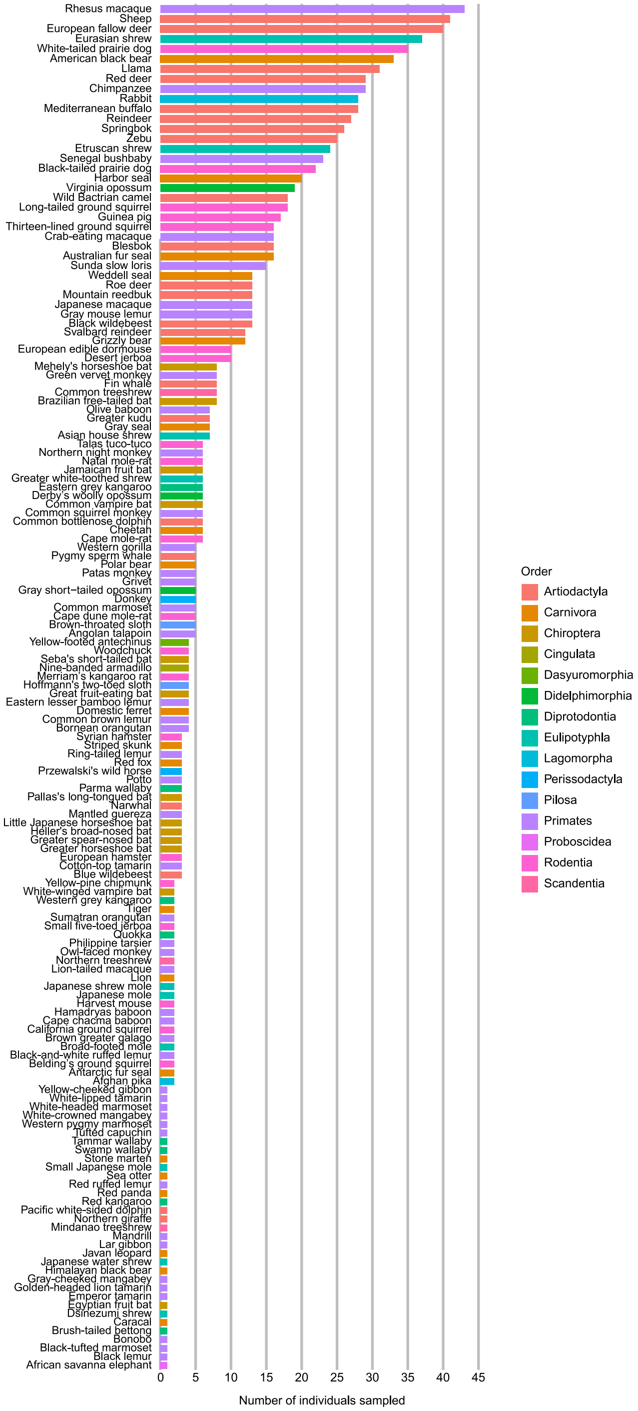

Fig. 6. Species with fewer than 50 sampled individuals.

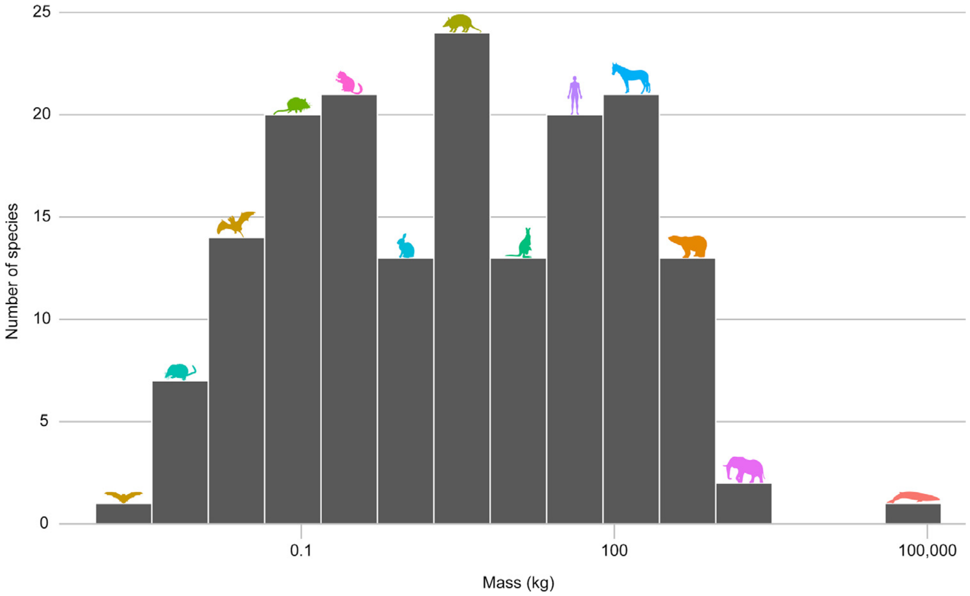

Fig. 7. Body mass range of mammalian species included in the meta-analysis. Icons represent some of the species included within each mass bin and are colored by taxonomic order.

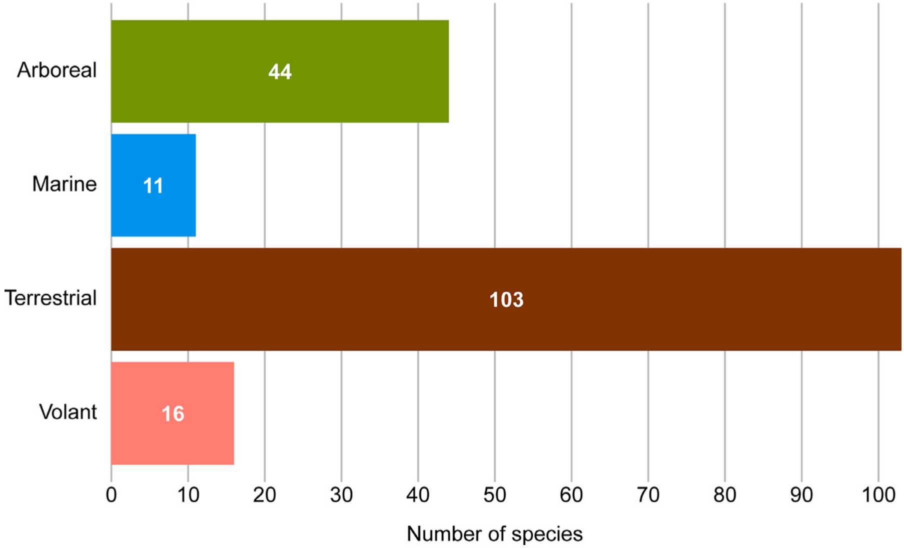

Fig. 8. Broad locomotor strategy types employed by species included in the meta-analysis.

Sampling richness and taxonomic diversity across skeletal muscles from which fiber composition data was recorded (Table 5). Table 5 quantifies the number of data points, sampled individuals, sampled species, and studies per skeletal muscle, as well as the average (unweighted) slow fiber composition of each sampled skeletal muscle across species. Data from Table 5 is used for Figs. 9 and 10.

Table 4

Number of unique skeletal muscle sampling terms and data points per anatomical compartment.

Anatomical compartment	No. of unique skeletal muscle sampling terms	No. of data points
Head	21	115
Neck	20	46
Shoulder	17	340
Brachium	12	238
Antebrachium	21	105
Hand	16	21
Trunk	41	331
Pelvic/gluteal	27	210
Thigh	27	661
Leg	23	684
Tail	13	27
Total	238	2,778

Table 5

Sampling characteristics and average (unweighted) slow fiber composition of each sampled skeletal muscle included in the meta-analysis. If the number of individuals sampled was not reported in the study, a value of "NA" is given in the "No. of individuals" column. Broad muscle terms marked as "undefined" are those from the literature that did not identify the specific muscle bellies included in the sample.

Muscle	Anatomical compartment	No. of data points	No. of individuals	No. of species	No. of studies	Avg. slow fiber composition (%)
Buccinator	Head	1	6	1	1	13.4
Cheek pouch (undefined)	Head	1	3	1	1	0.0
Cheek pouch retractor	Head	1	3	1	1	15.0
Depressor conchae	Head	1	10	1	1	30.0
Digastricus (anterior)	Head	10	18	10	1	9.0
Digastricus (posterior)	Head	1	7	1	1	2.3
Extraocular	Head	1	NA	1	1	0.0
Frontalis	Head	1	6	1	1	64.1
Masseter	Head	26	94	21	13	19.9
Medial pterygoid	Head	10	17	10	1	22.2
Mylohyoid	Head	12	21	12	3	20.5
Nasorostralis superficialis	Head	1	4	1	1	52.9
Orbicularis oculi	Head	3	21	2	3	12.5
Orbicularis oris	Head	1	10	1	1	15.0
Orbicularis oris (marginal)	Head	1	5	1	1	34.0
Orbicularis oris (peripheral)	Head	1	5	1	1	27.0
Styloglossus	Head	2	11	2	1	33.8
Temporalis	Head	18	50	14	7	16.9
Tensor tympani	Head	10	17	10	1	21.5
Tensor veli palatini	Head	10	17	10	1	15.0
Tongue (undefined)	Head	3	NA	2	2	0.0
Biventer cervicis	Neck	2	9	2	2	52.2
Brachiocephalicus	Neck	2	3	2	2	37.7
Cleidocephalicus	Neck	2	15	2	2	17.9
Cleidocervicalis	Neck	1	3	1	1	24.0
Cleidomastoid	Neck	1	3	1	1	23.0
Cleidooccipital	Neck	1	6	1	1	28.0
Cricopharyngeus	Neck	2	16	2	2	40.8
Obliques capitis	Neck	1	6	1	1	39.0
Omotransversarius	Neck	4	34	4	4	32.7
Rectus capitis posterior major	Neck	2	12	2	2	39.2
Rectus capitis posterior minor	Neck	1	6	1	1	23.0
Rhomboideus capitis	Neck	1	6	1	1	56.0
Scalenus	Neck	3	12	3	3	23.0
Semispinalis capitis	Neck	5	21	5	5	45.2
Semispinalis cervicis	Neck	1	6	1	1	38.0
Splenius	Neck	7	29	7	7	33.8
Sternocephalicus	Neck	3	12	3	3	29.2

(*continued on next page*)

Table 5 (*continued*)

Muscle	Anatomical compartment	No. of data points	No. of individuals	No. of species	No. of studies	Avg. slow fiber composition (%)
Sternohyoid	Neck	3	13	3	3	21.9
Sternomastoid	Neck	3	19	3	3	28.0
Thyroarytenoideus	Neck	1	8	1	1	2.5
Atlantoscapularis	Shoulder	2	10	2	2	32.4
Cleidobrachialis	Shoulder	2	12	2	2	20.2
Deltoid	Shoulder	57	244	42	23	30.1
Dorsoepitrochlearis	Shoulder	1	3	1	1	28.0
Infraspinatus	Shoulder	31	152	25	19	27.7
Latissimus dorsi	Shoulder	29	102	24	22	30.7
Pectoralis	Shoulder	57	243	51	33	21.4
Pectoralis abdominis lateralis	Shoulder	1	4	1	1	38.3
Rhomboid	Shoulder	16	63	14	14	39.1
Spinodeltoidius	Shoulder	1	3	1	1	2.0
Spinotrapezius	Shoulder	2	7	2	2	42.3
Subclavius	Shoulder	1	6	1	1	23.3
Subscapularis	Shoulder	23	65	22	13	21.4
Supraspinatus	Shoulder	51	137	23	20	33.2
Teres major	Shoulder	30	87	29	16	27.3
Teres minor	Shoulder	7	26	6	6	44.3
Trapezius	Shoulder	29	151	25	19	30.1
Biceps brachii	Brachium	42	208	30	21	24.6
Biceps brachii (long)	Brachium	9	43	7	7	41.8
Biceps brachii (short)	Brachium	7	34	5	6	26.7
Brachialis	Brachium	22	80	21	13	30.4
Coracobrachialis	Brachium	5	17	4	5	41.3
Tensor fascia antebrachii	Brachium	2	10	2	2	32.1
Triceps brachii	Brachium	42	250	20	17	31.7
Triceps brachii accessorius	Brachium	1	3	1	1	90.0
Triceps brachii (angular)	Brachium	1	4	1	1	24.5
Triceps brachii lateralis	Brachium	32	104	29	21	19.7
Triceps brachii longus	Brachium	44	187	33	24	25.7
Triceps brachii medialis	Brachium	31	113	25	20	42.5
Abductor pollicis longus	Antebrachium	2	9	2	2	43.2
Anconeus	Antebrachium	3	18	3	3	87.6
Brachioradialis	Antebrachium	9	43	6	7	40.4
Extensor carpi radialis	Antebrachium	7	34	6	7	26.0
Extensor carpi ulnaris	Antebrachium	5	24	5	5	38.8
Extensor digiti minimi (quinti)	Antebrachium	2	7	2	2	59.6
Extensor digitorum communis	Antebrachium	18	84	16	12	24.0
Extensor digitorum lateralis	Antebrachium	2	5	2	2	16.7
Extensor indicis proprius	Antebrachium	1	6	1	1	57.7
Extensor pollicis brevis	Antebrachium	1	6	1	1	57.8
Extensor pollicis longus	Antebrachium	1	6	1	1	50.4
Flexor carpi radialis	Antebrachium	5	31	5	5	29.2
Flexor carpi ulnaris	Antebrachium	11	59	10	10	38.6
Flexor digitorum communis	Antebrachium	3	11	3	3	27.8
Flexor digitorum profundus	Antebrachium	15	73	13	9	21.5
Flexor digitorum superficialis	Antebrachium	8	55	7	8	40.2
Flexor pollicis longus	Antebrachium	1	6	1	1	44.1
Palmaris longus	Antebrachium	4	21	4	3	43.9
Pronator quadratus	Antebrachium	2	9	2	2	56.8
Pronator teres	Antebrachium	3	13	3	3	34.3
Supinator	Antebrachium	2	9	2	2	41.3
Abductor digiti minimi	Hand	2	12	1	2	56.5
Abductor pollicis brevis	Hand	2	12	1	2	66.0
Adductor pollicis	Hand	2	12	1	2	78.9
Extensor digitorum brevis	Hand	2	7	2	2	53.7
Flexor digiti minimi brevis	Hand	1	6	1	1	68.2

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Table 5 (*continued*)

Muscle	Anatomical compartment	No. of data points	No. of individuals	No. of species	No. of studies	Avg. slow fiber composition (%)
Flexor digitorum brevis	Hand	1	6	1	1	44.5
Flexor pollicis brevis	Hand	1	6	1	1	76.7
Interosseous (Dorsal, 1st)	Hand	2	12	1	2	62.5
Interosseous (Dorsal, 4th)	Hand	1	6	1	1	55.4
Interosseous (Palmar, 1st)	Hand	1	6	1	1	60.6
Interosseous (Palmar, 3rd)	Hand	1	6	1	1	46.9
Lumbrical (1st)	Hand	1	6	1	1	82.7
Lumbrical (4th)	Hand	1	6	1	1	86.3
Lumbricals (undefined)	Hand	1	4	1	1	38.4
Opponens digiti minimi	Hand	1	6	1	1	82.9
Opponens pollici	Hand	1	6	1	1	74.7
Diaphragm	Trunk	27	171	21	18	25.5
Erector spinae	Trunk	2	7	2	2	49.9
Extensor caudae lateralis	Trunk	2	10	2	2	38.5
Extensor caudae medialis	Trunk	3	14	3	3	54.2
Flexor caudae lateralis	Trunk	1	3	1	1	53.0
Flexor caudae medialis	Trunk	1	3	1	1	50.0
Hypaxialis lumborum	Trunk	2	7	2	2	52.5
Iliocostalis	Trunk	6	28	6	4	38.8
Iliocostalis (lumbar)	Trunk	6	23	6	3	46.4
Iliocostalis (thoracic)	Trunk	6	20	6	3	40.9
Intercostals	Trunk	4	14	4	3	51.8
Intermammillares mammilloaccessorii L4	Trunk	1	3	1	1	67.5
Intermammillares mammilloaccessorii L6	Trunk	1	3	1	1	81.2
Interpinales	Trunk	5	17	5	4	29.5
Intertransversarii	Trunk	5	22	5	5	52.8
Longissimus	Trunk	53	411	21	30	29.5
Longissimus capitis	Trunk	1	6	1	1	33.0
Longissimus dorsi	Trunk	36	749	23	16	29.7
Longissimus (lumbar)	Trunk	27	118	21	10	14.8
Longissimus (thoracic)	Trunk	24	133	17	10	21.4
Longissimus (thoracic and lumbar)	Trunk	4	17	2	3	11.6
Longissimus et multifidus (L3)	Trunk	2	38	1	1	21.4
Longissimus et multifidus (Th9)	Trunk	1	21	1	1	73.7
Multifidus	Trunk	16	104	12	14	42.1
Multifidus (lumbar)	Trunk	4	31	4	2	48.3
Multifidus (thoracic)	Trunk	3	10	3	1	42.0
Obliques	Trunk	19	57	19	11	23.7
Panniculus carnosus	Trunk	1	4	1	1	66.2
Quadratus lumborum	Trunk	4	12	4	3	31.4
Rectus abdominis	Trunk	19	57	18	12	22.0
Rotatores	Trunk	3	6	3	2	11.3
Sacrospinalis	Trunk	5	15	5	4	5.6
Semispinalis and longissimus	Trunk	1	3	1	1	46.3
Serratus abdominis	Trunk	9	16	9	2	0.0
Serratus anterior	Trunk	2	7	2	2	52.0
Serratus cervicis	Trunk	1	3	1	1	60.6
Serratus dorsalis	Trunk	1	3	1	1	57.0
Serratus ventralis	Trunk	15	75	10	13	36.6
Spinalis transversospinalis (lumbar)	Trunk	1	3	1	1	30.4
Spinalis transversospinalis (thoracic)	Trunk	2	9	2	2	69.4
Transversus abdominis	Trunk	5	17	5	5	41.8
Capsularis	Pelvic/gluteal	1	3	1	1	99.0
Coccygeus	Pelvic/gluteal	1	1	1	1	3.0

(*continued on next page*)

Table 5 (*continued*)

Muscle	Anatomical compartment	No. of data points	No. of individuals	No. of species	No. of studies	Avg. slow fiber composition (%)
Cremaster	Pelvic/gluteal	1	3	1	1	33.0
Gemelli (undefined)	Pelvic/gluteal	1	3	1	1	69.0
Gemellus inferior	Pelvic/gluteal	3	10	3	3	34.1
Gemellus superior	Pelvic/gluteal	3	10	3	3	51.3
Gluteofemoralis	Pelvic/gluteal	4	19	4	2	7.6
Gluteals (undefined)	Pelvic/gluteal	4	21	3	3	29.2
Gluteobiceps	Pelvic/gluteal	1	7	1	1	19.8
Gluteus accessorius	Pelvic/gluteal	2	8	2	2	61.2
Gluteus maximus	Pelvic/gluteal	6	36	5	4	34.1
Gluteus maximus ischiofemoralis	Pelvic/gluteal	2	4	2	2	41.1
Gluteus maximus proprius	Pelvic/gluteal	2	4	2	2	19.2
Gluteus medius	Pelvic/gluteal	70	436	35	37	24.7
Gluteus minimus	Pelvic/gluteal	8	50	8	5	40.0
Gluteus profundus	Pelvic/gluteal	2	12	2	2	69.8
Gluteus superficialis	Pelvic/gluteal	8	36	7	6	15.7
Iliacus	Pelvic/gluteal	18	66	18	9	27.6
Iliopsoas	Pelvic/gluteal	2	9	2	2	46.7
Levator ani	Pelvic/gluteal	1	NA	1	1	0.0
Obturator externus	Pelvic/gluteal	5	16	5	5	37.7
Obturator internus	Pelvic/gluteal	4	13	4	4	38.9
Piriformis	Pelvic/gluteal	7	47	7	5	43.5
Psoas major	Pelvic/gluteal	38	189	25	22	23.8
Psoas minor	Pelvic/gluteal	4	39	3	4	33.2
Psoas (major et minor)	Pelvic/gluteal	3	6	3	2	1.0
Quadratus femoris	Pelvic/gluteal	9	52	8	8	77.0
Abductor	Thigh	1	3	1	1	20.0
Adductor brevis	Thigh	15	69	11	9	38.4
Adductor longus	Thigh	16	64	11	11	51.7
Adductor magnus	Thigh	22	83	13	15	22.3
Adductor magnus ischiocondylaris	Thigh	2	4	2	2	48.3
Adductor magnus pubofemoralis	Thigh	2	4	2	2	39.1
Adductor tertius	Thigh	1	6	1	1	1.2
Adductors (undefined)	Thigh	17	56	16	10	10.3
Biceps femoris	Thigh	102	648	46	47	21.0
Biceps femoris (long)	Thigh	3	10	3	3	55.0
Biceps femoris (short)	Thigh	3	10	3	3	40.9
Cruralis	Thigh	1	1	1	1	53.0
Femorococcygeus	Thigh	3	18	3	1	16.5
Gracilis	Thigh	34	152	26	21	17.6
Hamstring (undefined)	Thigh	1	NA	1	1	62.0
Pectineus	Thigh	19	76	16	12	33.2
Quadriceps (undefined)	Thigh	12	138	6	8	18.3
Rectus femoris	Thigh	48	185	35	31	17.7
Sartorius	Thigh	18	77	14	14	37.8
Semimembranosus	Thigh	71	416	38	38	21.2
Semimembranosus access orius	Thigh	1	1	1	1	99.0
Semitendinosus	Thigh	76	339	45	46	20.4
Tensor fascia latae	Thigh	16	51	11	14	13.1
Tenuissimus	Thigh	1	1	1	1	20.0
Vastus intermedius	Thigh	49	203	24	30	60.8
Vastus lateralis	Thigh	91	540	56	54	16.4
Vastus medialis	Thigh	45	171	35	28	19.7
Extensor digitorum	Leg	26	169	13	20	15.1
Extensor digitorum lateralis	Leg	3	11	3	3	18.1
Extensor digitorum longus	Leg	59	265	36	32	10.9
Extensor hallucis longus	Leg	11	51	8	8	22.1

(*continued on next page*)

Table 5 (*continued*)

Muscle	Anatomical compartment	No. of data points	No. of individuals	No. of species	No. of studies	Avg. slow fiber composition (%)
Flexor digitorum	Leg	2	10	2	2	31.4
Flexor digitorum fibularis	Leg	6	24	6	4	26.9
Flexor digitorum longus	Leg	13	56	10	8	13.7
Flexor digitorum profundus	Leg	11	22	11	5	19.3
Flexor digitorum superficialis	Leg	10	61	7	9	42.2
Flexor digitorum tibialis	Leg	5	22	5	3	18.2
Flexor hallucis longus	Leg	11	58	9	9	22.1
Gastrocnemius	Leg	71	237	44	32	25.4
Gastrocnemius lateralis	Leg	61	303	43	45	20.1
Gastrocnemius medialis	Leg	66	321	46	47	19.9
Peroneals (undefined)	Leg	2	9	1	1	12.5
Peroneus brevis	Leg	12	50	10	7	21.9
Peroneus longus	Leg	17	72	12	12	23.1
Peroneus tertius	Leg	4	20	4	3	10.0
Plantaris	Leg	49	224	26	34	17.7
Popliteus	Leg	7	21	7	5	31.3
Soleus	Leg	141	820	58	87	69.4
Tibialis anterior	Leg	81	301	46	50	16.8
Tibialis posterior	Leg	15	67	11	11	18.5
Abductor caudae externus	Tail	1	7	1	1	19.8
Abductor caudae internus	Tail	1	7	1	1	16.8
Caudofemoralis	Tail	5	7	4	3	1.4
Flexor caudae brevis	Tail	1	7	1	1	21.6
Flexor caudae longus	Tail	1	7	1	1	27.4
Sacrocaudalis	Tail	2	13	2	2	10.6
Tail	Tail	2	12	1	2	24.5
Tail (distal)	Tail	4	23	3	3	24.9
Tail (mid dorsal)	Tail	1	7	1	1	41.6
Tail (mid ventral)	Tail	1	7	1	1	40.0
Tail (proximal)	Tail	4	23	3	3	11.5
Tail (tip)	Tail	1	7	1	1	5.0
Tail (transitional)	Tail	3	16	3	2	20.3

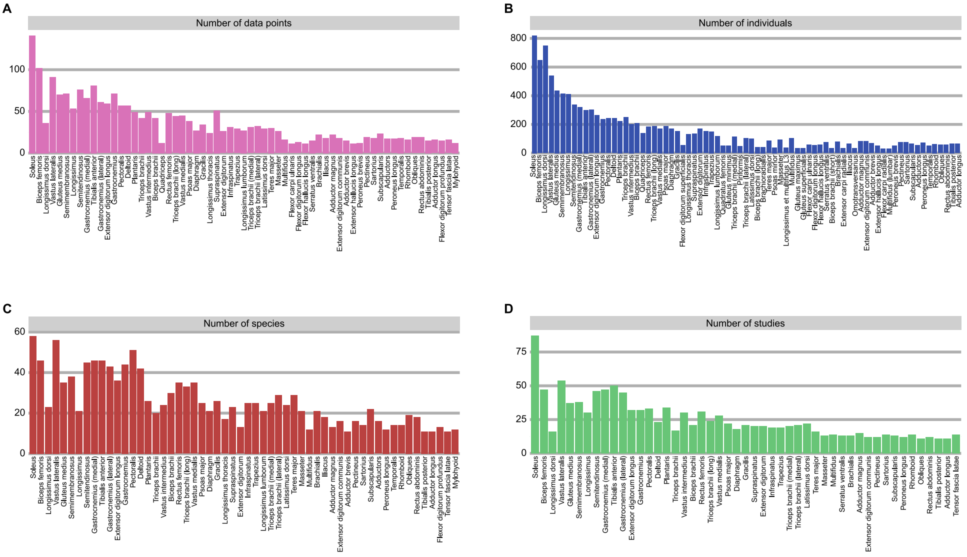

Fig. 9. The most represented skeletal muscles in the literature by (A) number of data points, (B) number of individuals sampled across taxa, (C) number of species, and (D) number of studies.

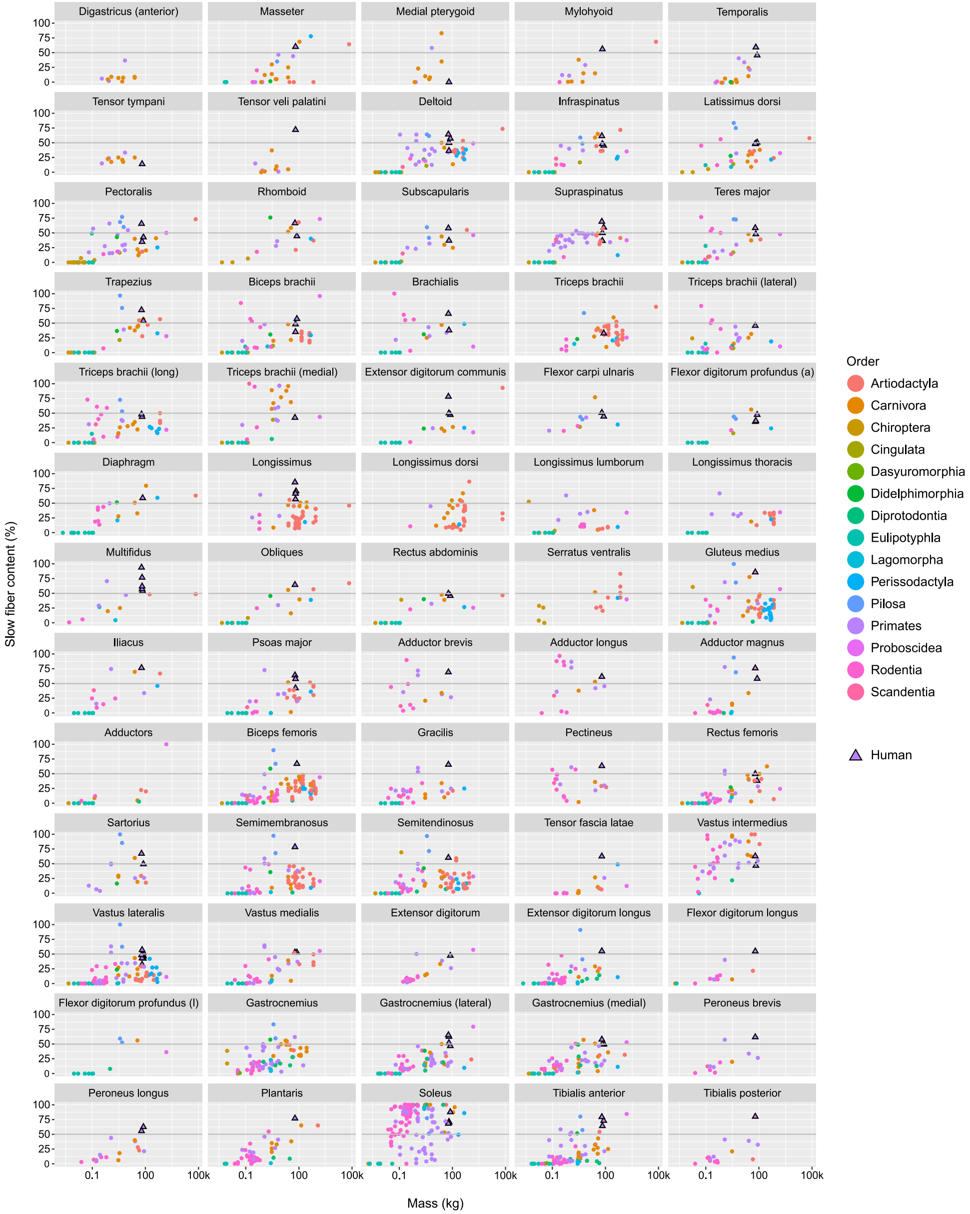

Fig. 10. The relationship between skeletal muscle slow fiber content (% fibers) and body mass (kg) for muscles that are represented in 10 or more unique species (n = 65 muscles). Gray line represents a slow fiber composition of 50%, above which denotes muscles that are slow fiber dominant. Species (data points) are colored by taxonomic order. Humans within the order Primates are distinguished by outlined triangles.

Certain skeletal muscles are more represented than others in the literature, with the *m. soleus* being the most represented (Fig. 9). The *mm. soleus, biceps femoris, vastus lateralis, tibialis anterior, semitendinosus, semimembranosus, gastrocnemius, gluteus medius* and *extensor digitorum longus* are the most heavily sampled muscles in terms number of data points (Fig. 9A). The *mm. soleus, longissimus dorsi, biceps femoris, vastus lateralis, gluteus medius, semimembranosus, longissimus, semitendinosus, gastrocnemius, tibialis anterior,* and *extensor digitorum longus* are the most heavily sampled muscles in terms number of individuals (Fig. 9B). The *mm. soleus, vastus lateralis, pectoralis, biceps femoris, gastrocnemius, tibialis anterior, semitendinosus, deltoid, semimembranosus,* and *extensor digitorum longus* are the most heavily sampled muscles in terms number of unique species (Fig. 9C). The *mm. soleus, vastus lateralis, tibialis anterior, biceps femoris, gastrocnemius, semitendinosus, semimembranosus, gluteus medius, plantaris,* and *pectoralis* are the most heavily sampled muscles in terms number of studies (Fig. 9D).

Sixty-five skeletal muscles are represented in 10 or more unique species. For these skeletal muscles, the relationship between skeletal muscle slow fiber content (% fibers) and average species body mass (kg) is depicted in Fig. 10.

4. Experimental Design, Materials and Methods

4.1. Eligibility Criteria and Study Selection

Published, peer-reviewed data were compiled for meta-analysis between June 1 2021 and November 30 2022 following a structure similar to Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) [2], facilitating transparency and ease of reproducibility. Terms relating to mammalian skeletal muscle fiber composition (fiber type slow fast myofiber OR myosin OR "heavy chain" "skeletal muscle" -Xenopus -avian -denervated -transition -develop -developing -stimulated -training -switch -aging -athlete -cardiomyopathy -spaceflight -Duchenne -immobilization -suspension) were queried using academic search systems (Google Scholar, PubMed, and JSTOR) and library databases for relevant primary articles. Reference lists in relevant articles were thoroughly investigated for eligible studies. No restrictions were set on the date of publication.

Articles identified via academic search systems were screened for relevancy by reviewing published abstracts and data tables. When relevant articles were identified, the article DOI and/or citation were recorded and the article PDF and associated supplemental materials were downloaded and renamed under this format: "PublicationDate_FirstAuthorLastName_Species.pdf." If multiple studies from the same first author from the same year exist, the second and third authors' last names were added to the file name.

Relevant articles were then assessed for eligibility. Eligible studies were published in the English language and provided muscle fiber composition data from at least one skeletal muscle from a species belonging to class Mammalia. Studies were not considered eligible for the meta-analysis for the following reasons: (i) muscle fiber composition data were not provided, (ii) muscle fiber composition data provided were ambiguous, (iii) muscle fiber composition data were provided for an unidentified muscle, (iv) muscle fiber composition data were provided for cardiac fibers, (v) muscle fiber composition data were provided for single muscle fibers, (vi) muscle fiber composition data were provided for a mammal under experimental manipulation (e.g. treadmill running, limb immobilization or dietary supplementation regime), (vii) the study duplicated another dataset, (viii) the source was secondary, and (ix) the source was an abstract (Fig. 1).

4.2. Data Extraction

The following data were recorded from the text, tables, figures, and supplementary materials of eligible studies when available: sampled species' common name, scientific name, sex, age, breed/strain, method for classification of muscle fiber composition, slow muscle fiber terminology used (e.g. MyHC I, MHC I, Type I, beta, slow oxidative, red or slow twitch), number of individuals sampled, average body mass (kg), muscle(s) sampled and average percent slow fiber content (% fibers).

In most studies, body mass was reported; for those studies that did not report a body mass the species mean was taken from Clarke et al. [3] or Genoud et al. [4]. When muscle fiber content was recorded as the percentage of fast muscle fibers within a skeletal muscle, the proportion of slow muscle fibers was derived as 100 minus the total proportion of fast muscle fibers. If slow muscle fiber content was reported from multiple superficial and deep sampling sites across a single muscle, the average across the sampling sites was recorded as the percent slow muscle fiber content of that muscle. Skeletal muscle terms were then assessed for redundancy and updated when necessary to reflect modern anatomical terminology.

Given that most studies were published between 1965 and 1999, binomial and common names were updated when necessary to reflect the current understanding of phylogenetic relationships. Taxonomic data (i.e. class, infraclass, magnorder, superorder, order, suborder, infraorder, parvorder, clade, superfamily, family, subfamily, tribe, and subspecies) provided by NCBI Taxonomy [11] was recorded for each species when available. Species were then categorized into one of four locomotor types based on how the species navigates through its habitat matrix: *arboreal, marine, terrestrial*, and *volant* (Fig. 8).

Ethics Statements

This work meets all of the ethical requirements required for publication in *Data in Brief*. This work did not involve the use of animal or human subjects.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data Availability

Meta-analysis data of skeletal muscle slow fiber content across mammalian species (Reference data) (Mendeley Data).

CRediT Author Statement

Samantha R. Queeno: Conceptualization, Methodology, Software, Validation, Formal analysis, Investigation, Data curation, Writing – original draft, Visualization; **Kirstin N. Sterner:** Conceptualization, Supervision, Writing – review & editing; **Matthew C. O'Neill:** Conceptualization, Investigation, Data curation, Supervision, Writing – review & editing.

Acknowledgments

Thanks to P.J. Reiser, C.M. Orr and T.D. Capellini for their contributions to the corresponding article [1]. Thanks also to the Milwaukee Zoo and Smithsonian Institution for access to cadaveric material, and to R. Lieber for sharing his human MyHC dataset.

The study related to the corresponding article [1] was supported by the National Science Foundation (BCS 2018436 and BCS 1945809) and the Leakey Foundation.

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