

# Nuchal Skinfold Thickness (NST): a novel parameter for assessment of body composition in childhood-onset craniopharyngioma

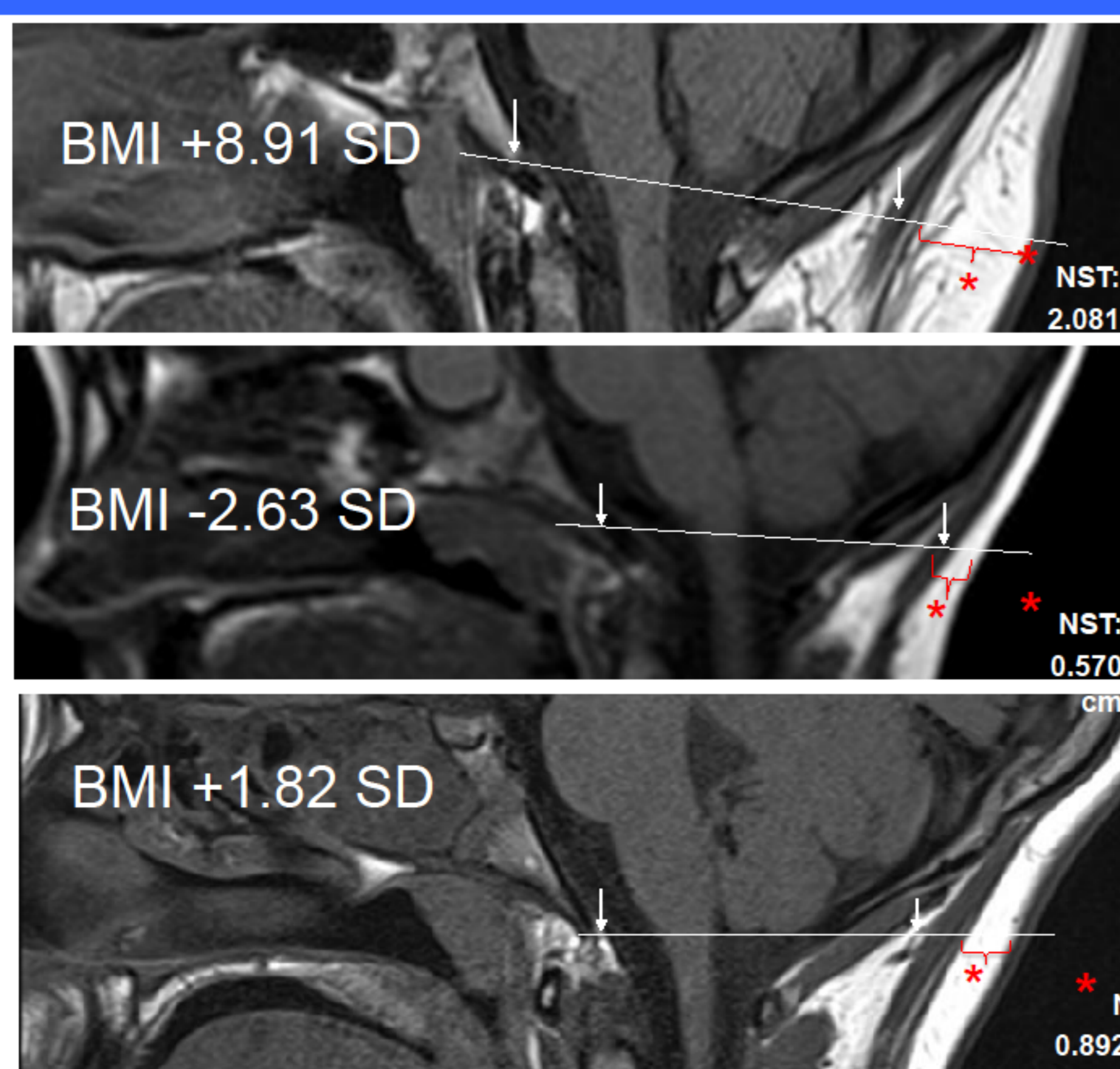
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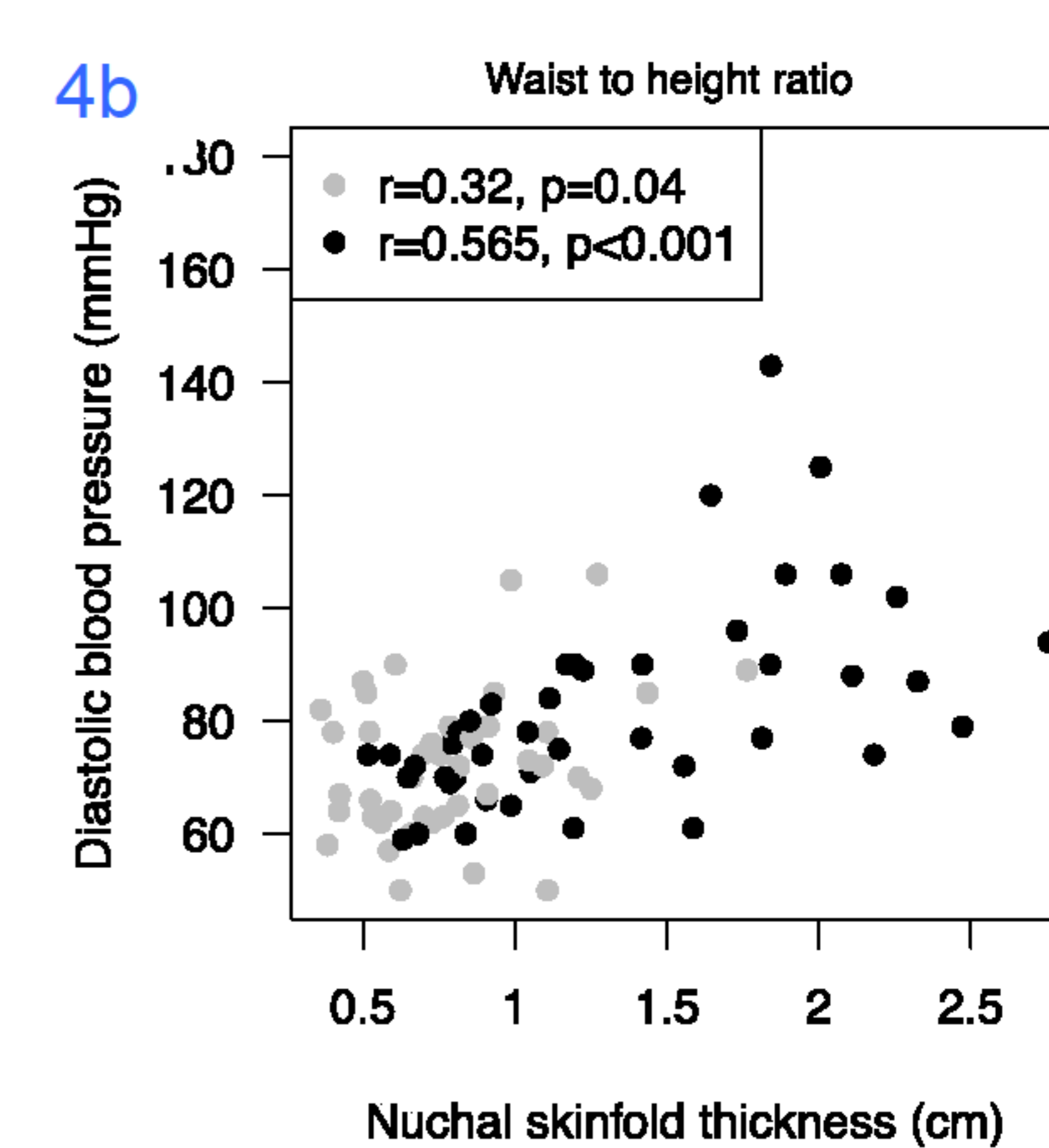
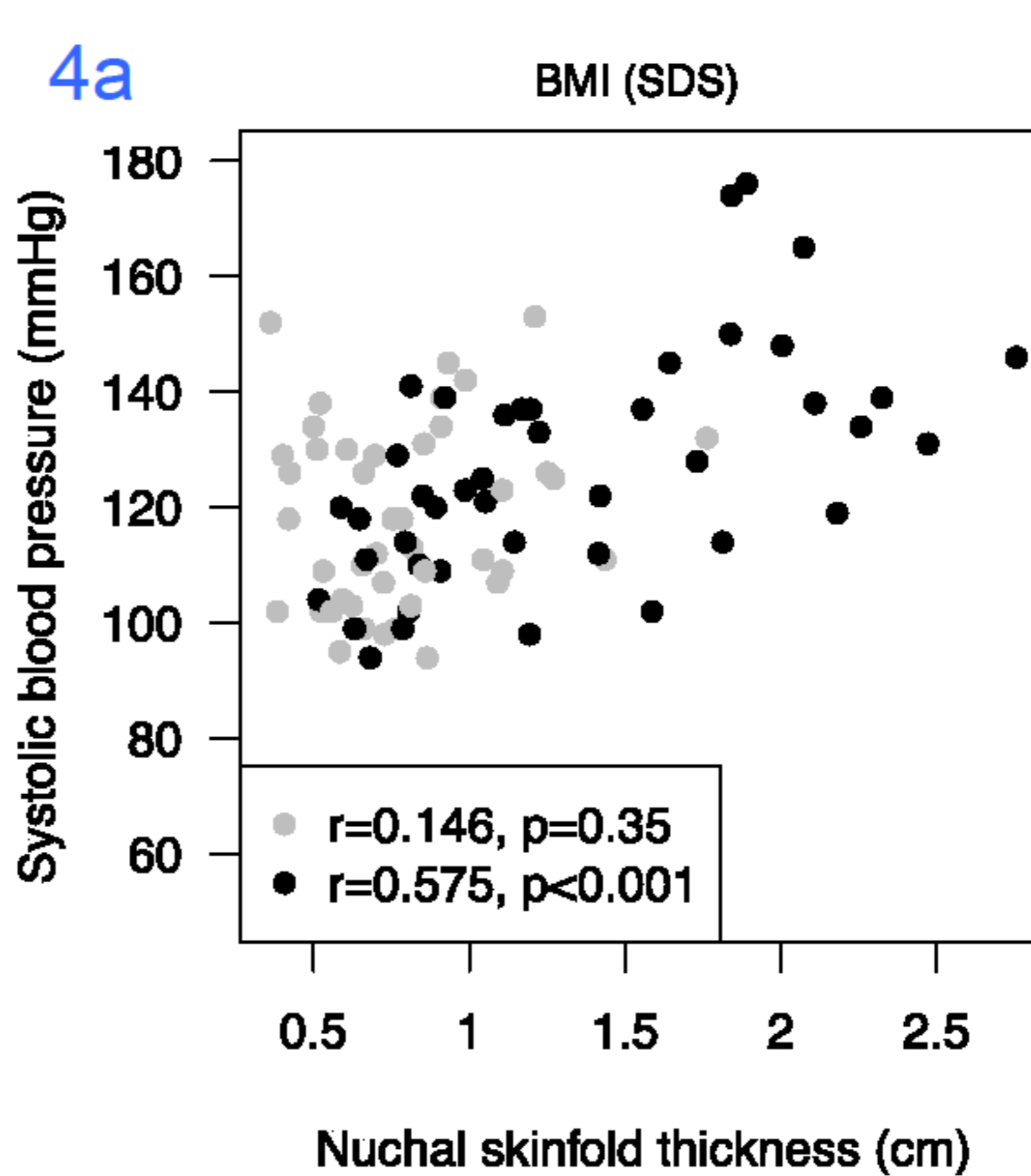
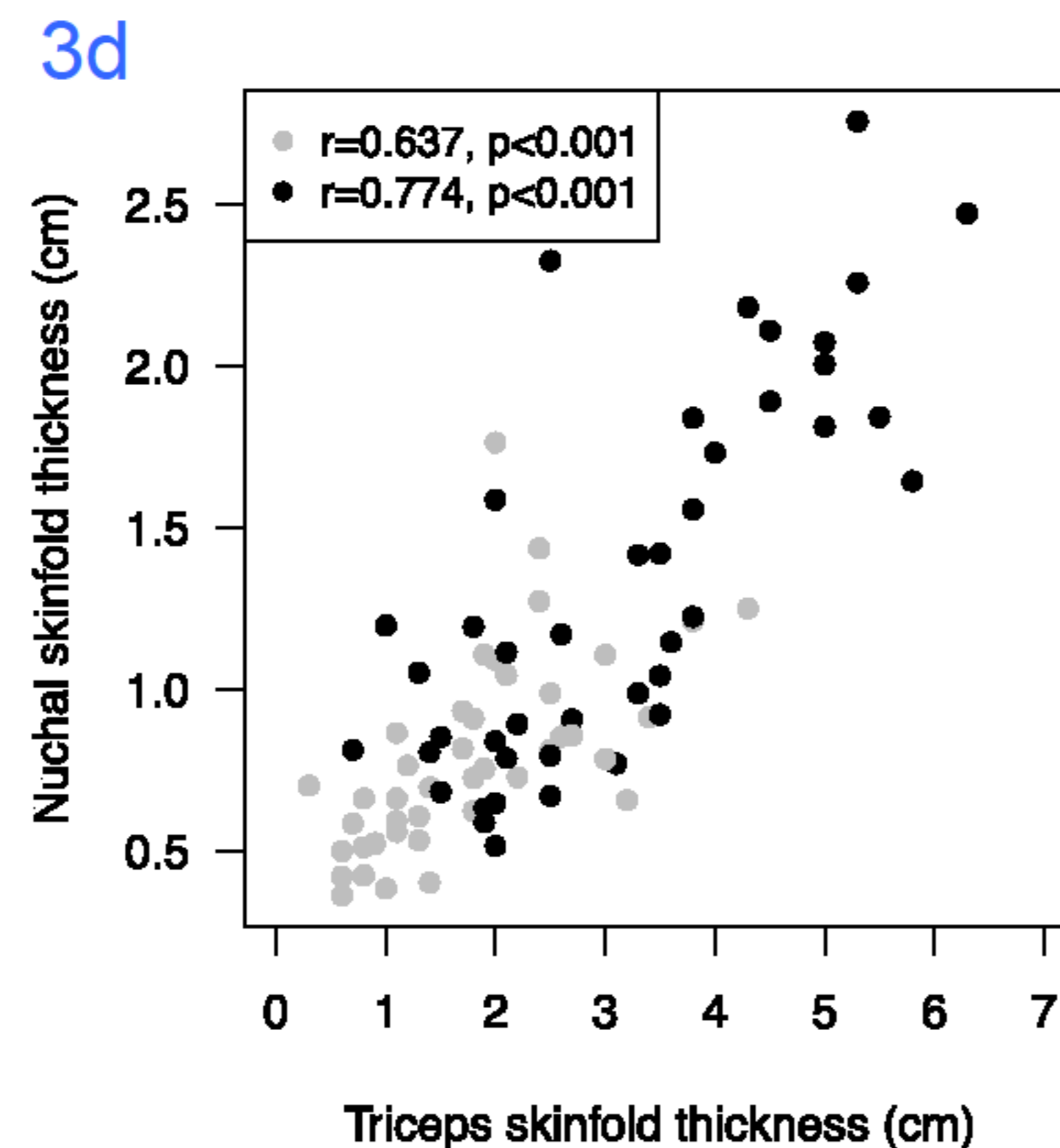
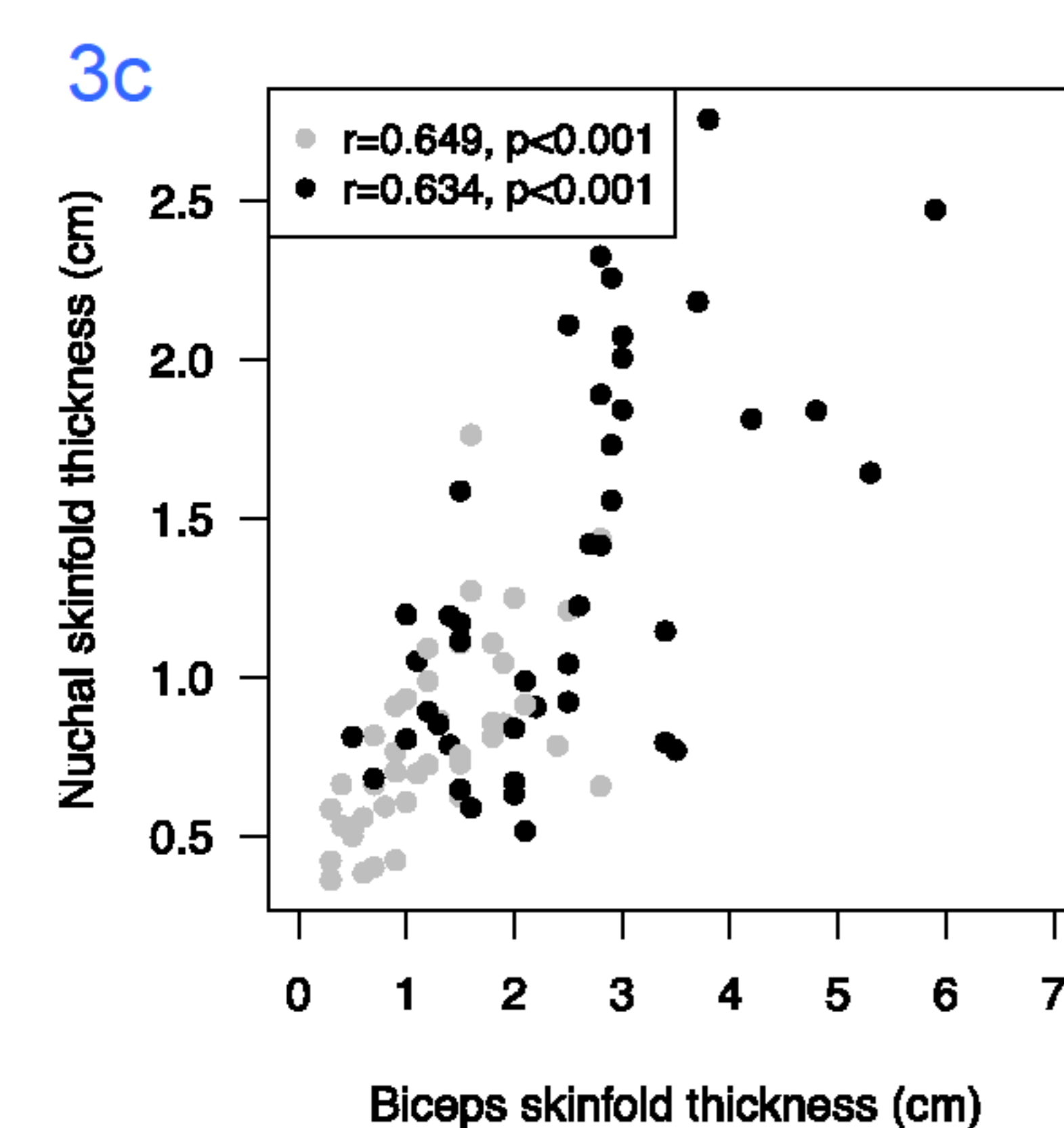
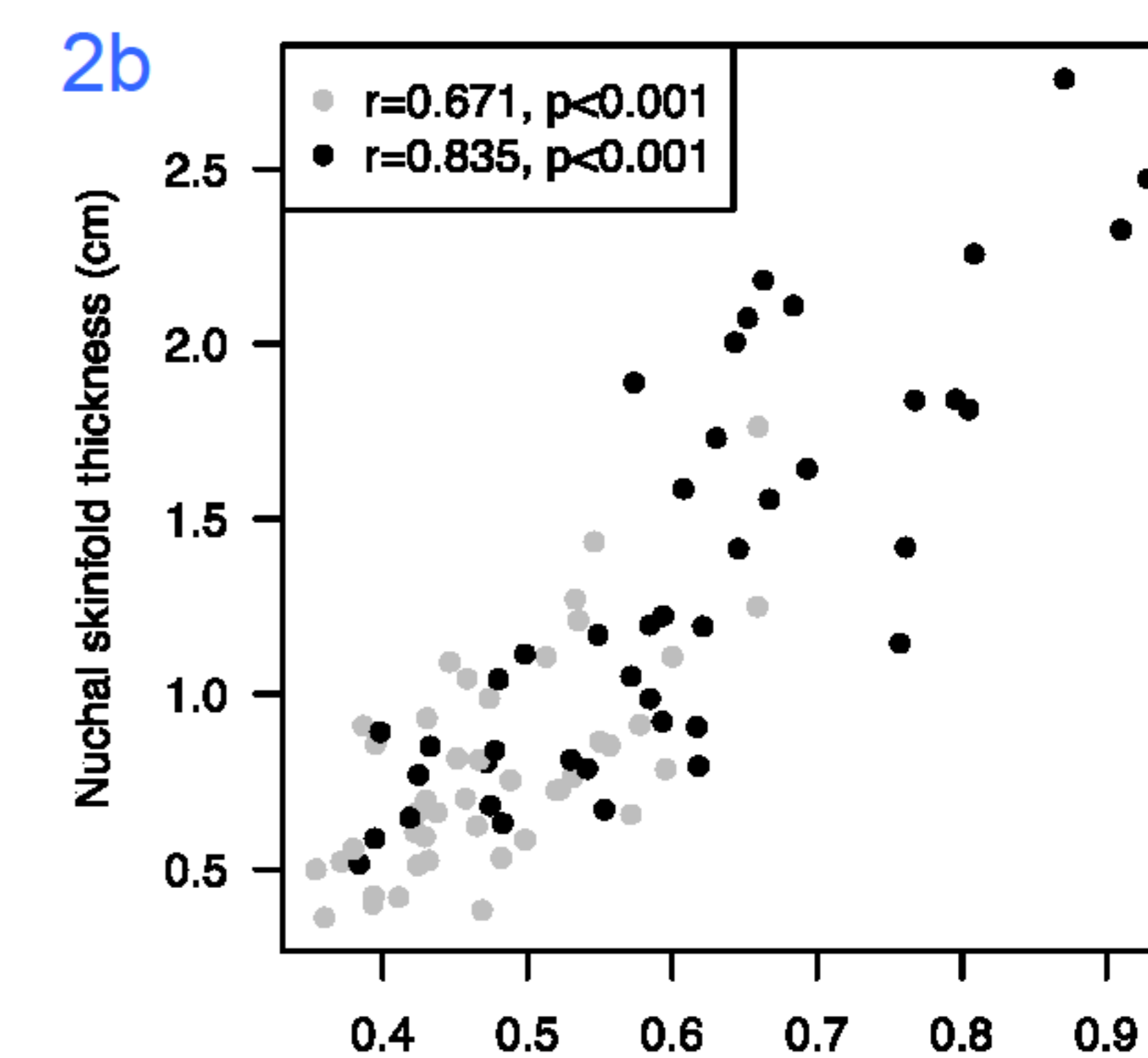
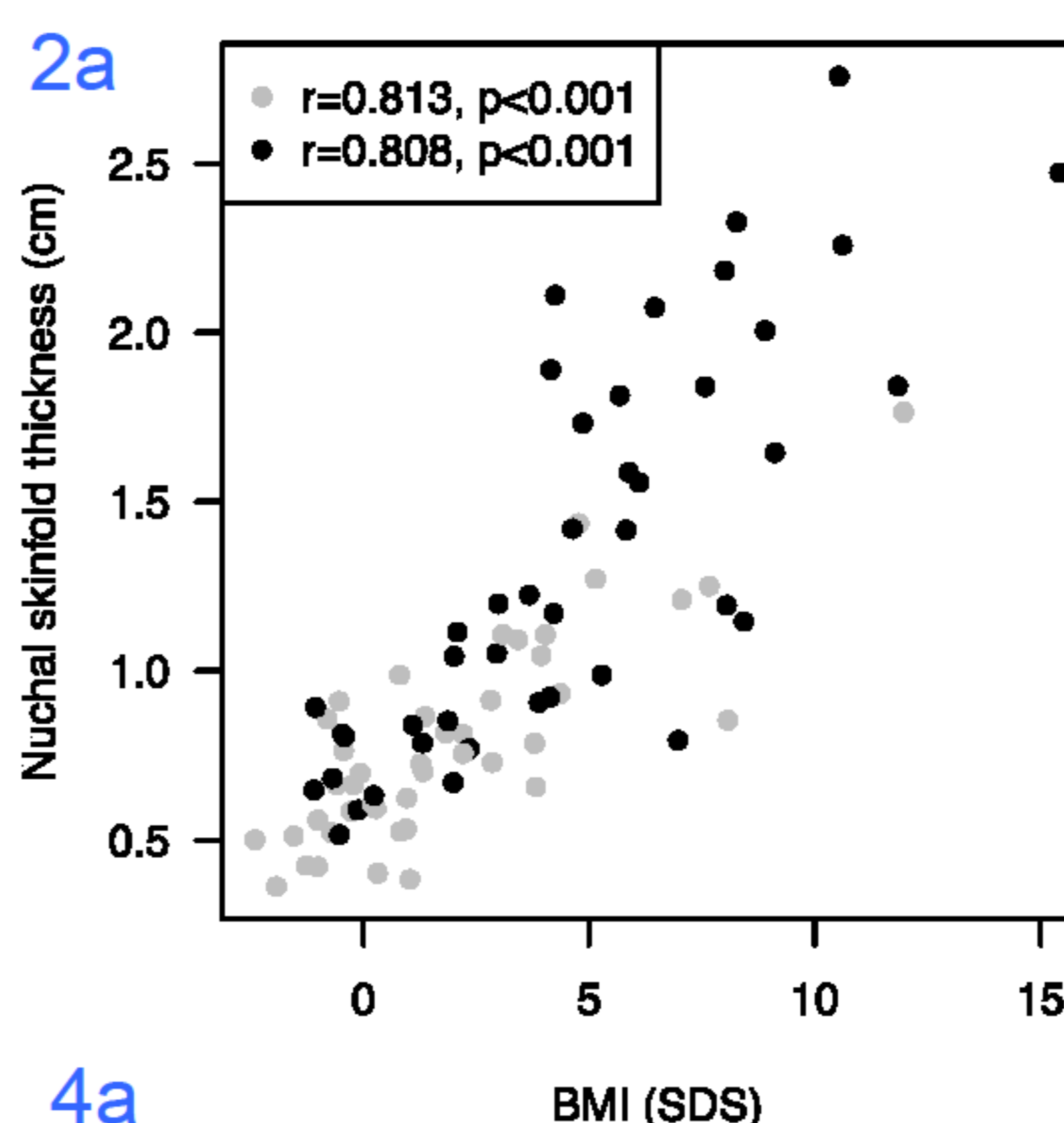
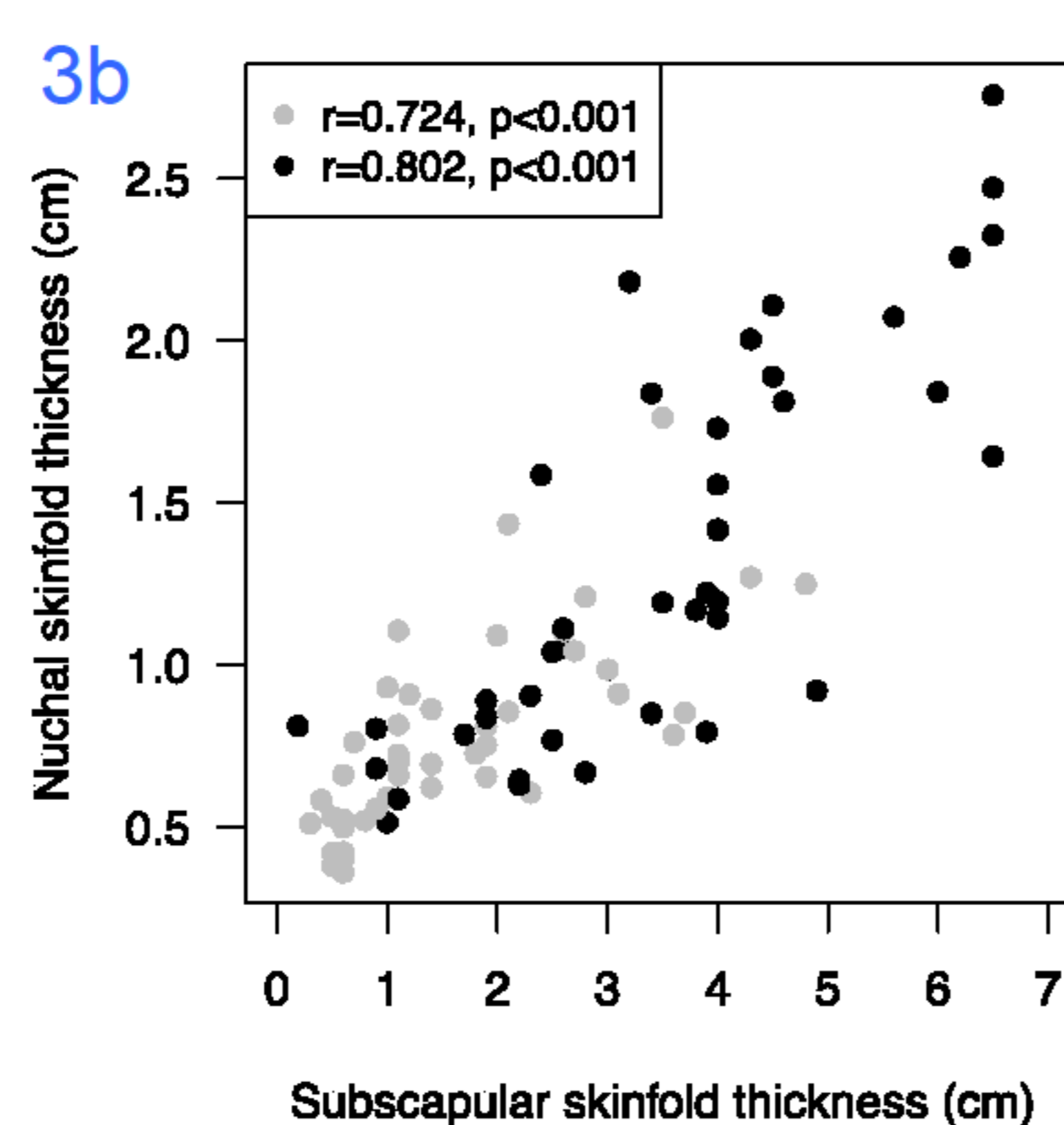
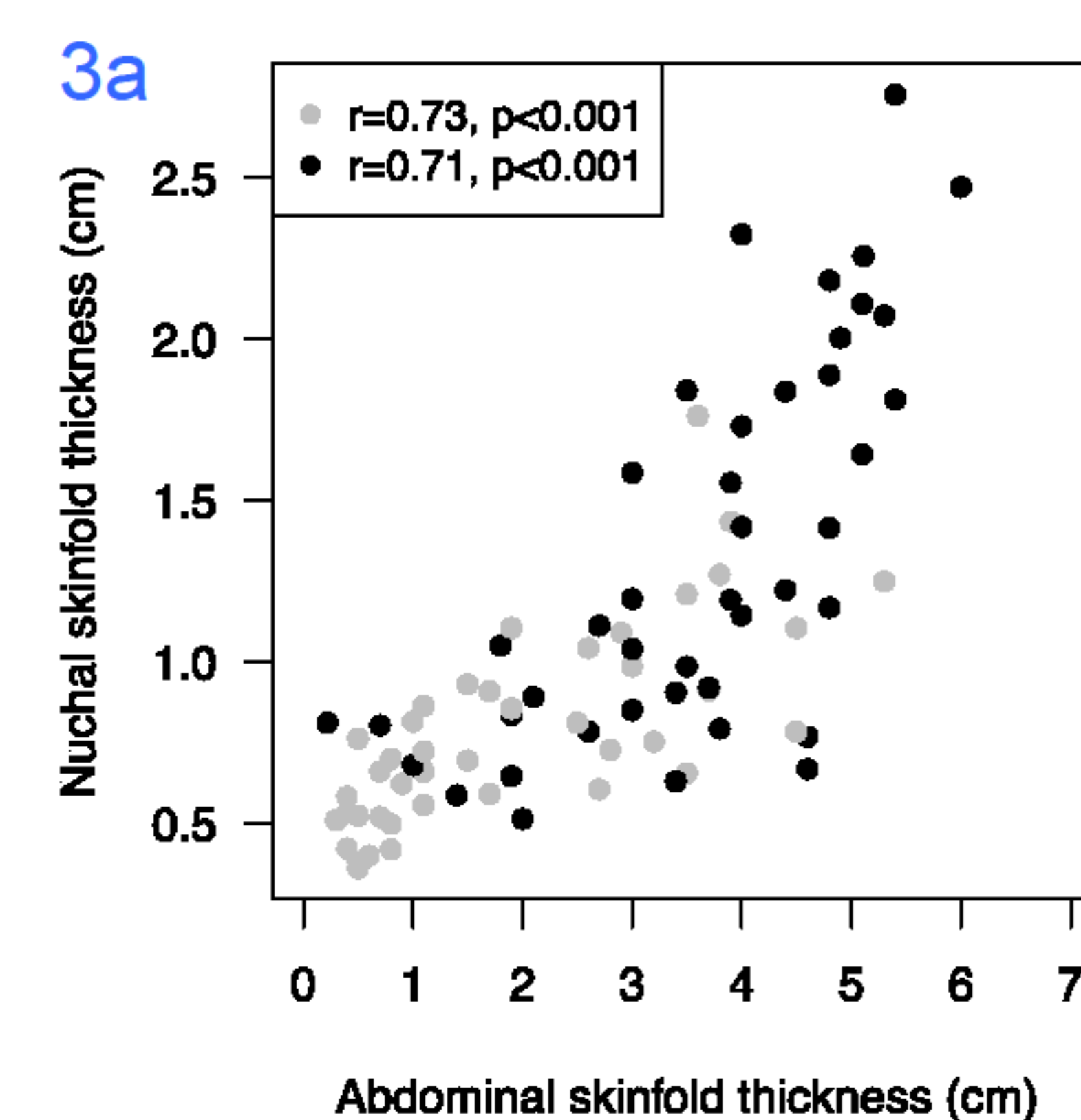
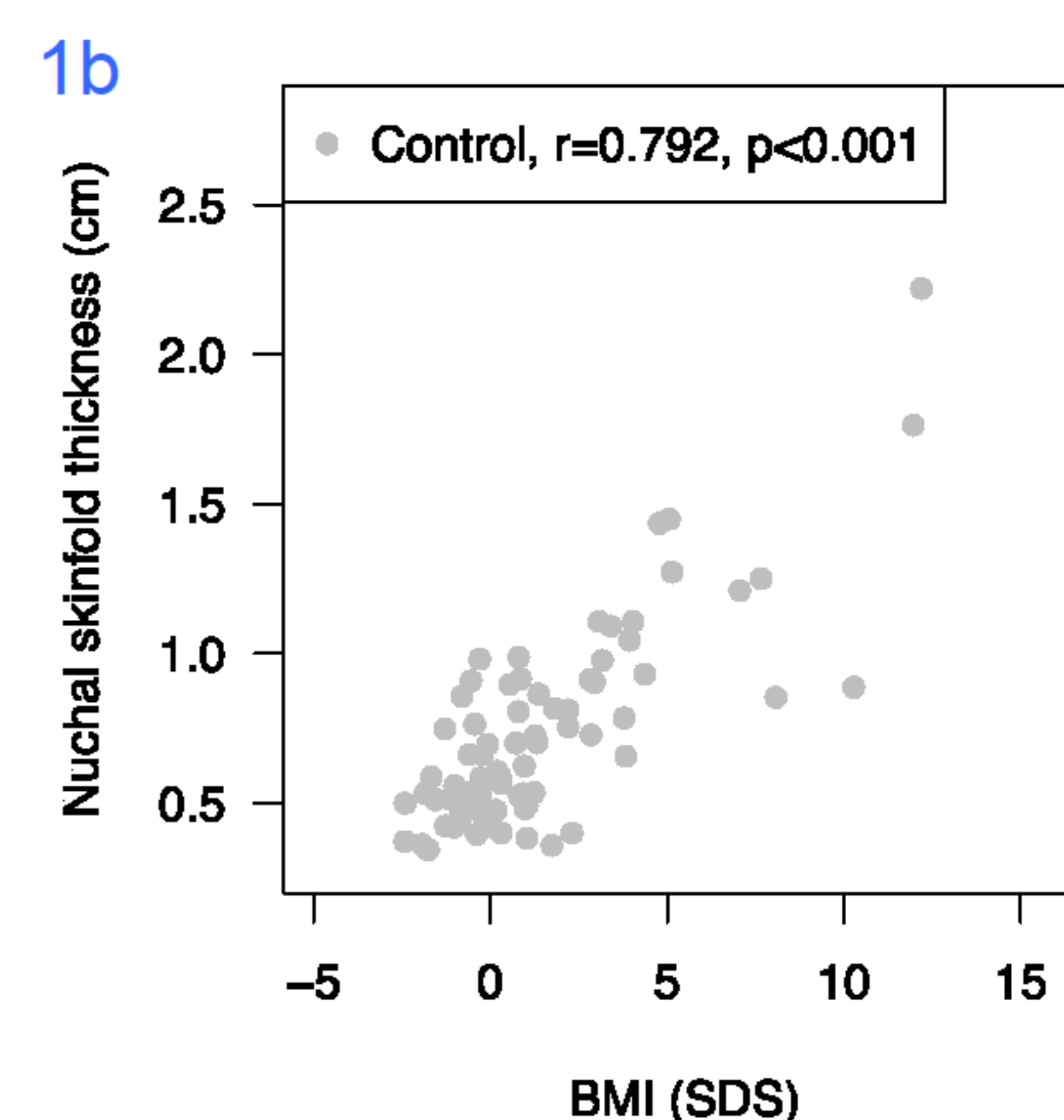
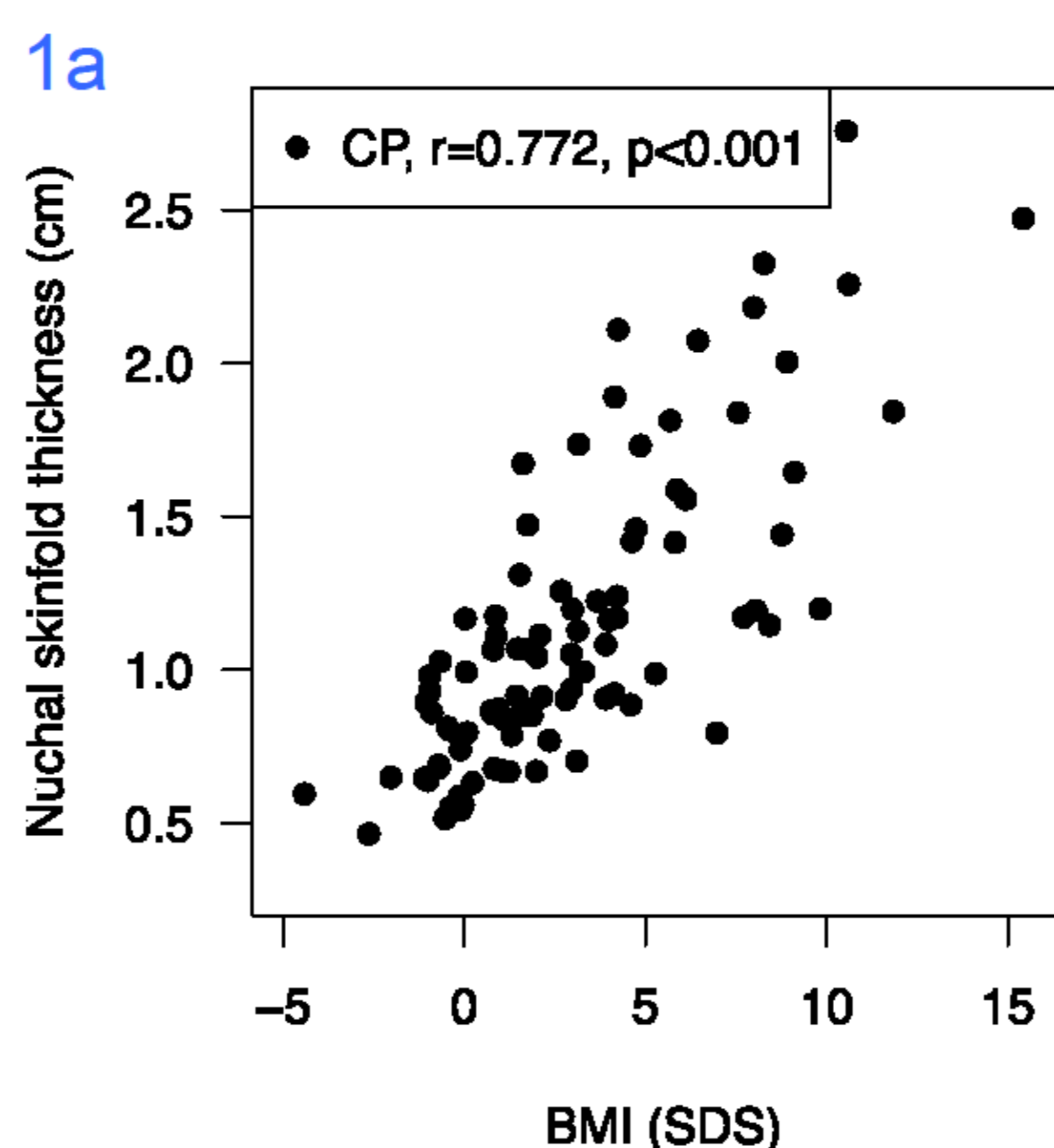
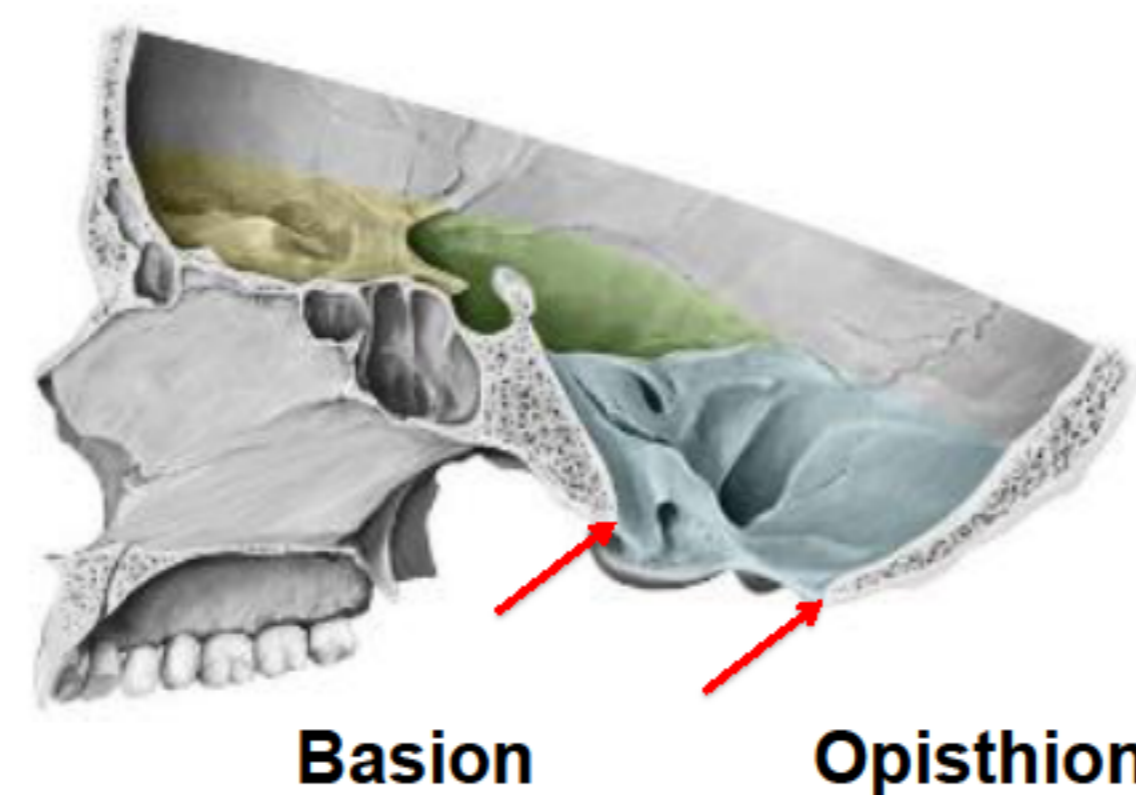
Hypothalamic obesity, cardiovascular disease (CVD), and relapses/progression have major impact on prognosis in childhood-onset craniopharyngioma (CP)

We analyzed nuchal skinfold thickness (NST) on MRI performed for follow-up monitoring as a novel parameter for body composition (BC) and CVD in 94 CP and 74 controls.

## Methods, Figures and Results



A line was drawn crossing the two anatomically defined points: basion (anterior margin of the foramen magnum) and opisthion (posterior margin of foramen magnum). The diameter of subcutaneous nuchal fat (depicted in red) was measured over this line to the nearest 0.1 cm.



## Results

**Fig. 1:** NST vs. BMI SDS in pts (a) and ctr (b)

**Fig. 2:** NST vs. BMI SDS (a) and WHtR (b)

**Fig. 3:** NST vs. caliper skinfold thickness (a-d)

**Fig. 4:** NST vs. systolic (a) diastolic (b) mmHg

NST correlated with BMI SDS ( $r=0.78$ ;  $p<0.001$ ;  $n=169$ ) and WHtR ( $r=0.85$ ;  $p<0.001$ ;  $n=86$ ) in total cohort and CP patients (black dots) (NST–BMI SDS:  $r=0.77$ ,  $p<0.001$ ,  $n=94$ ; Fig.1a); NST–WHtR:  $r=0.835$ ,  $p<0.001$ ,  $n=43$ ; Fig.2b) and controls (grey dots) (NST–BMI SDS:  $r=0.792$ ,  $p<0.001$ ,  $n=75$ ; Fig.1b; NST–WHtR:  $r=0.671$ ,  $p<0.001$ ,  $n=43$ ; Fig.2b).

Comparing NST with caliper-measured skinfolds (Fig.3), subscapular (Fig.3b), and abdominal skinfold thickness (Fig.3a) revealed highest correlation ( $p<0.001$ ) with NST in both CP ( $r=0.802$ ;  $r=0.710$ ) and controls ( $r=0.724$ ,  $r=0.730$ ). In CP patients, syst. BP correlated with NST ( $r=0.575$ ,  $p<0.001$ ; Fig.4a), BMI SDS ( $r=0.434$ ,  $p=0.004$ ), and WHtR ( $r=0.386$ ,  $p=0.011$ ). Similar results were observed for diast. BP in CP (Fig.4b). In multivariate analyses, NST had predictive value for hypertension in postpubertal CP and ctrls (OR=6.98, 95%CI [1.65,29.5],  $p=0.008$ )

## Conclusions

As monitoring of MRI and BC is an essential for follow-up in CP, NST could serve as a novel, clinically relevant and easily determinable parameter for assessment of BC and CVD risk in CP patients.

## Contact & Acknowledgements

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