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BOOK OF ABSTRACTS



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VEREIN ZUR FÖRDERUNG DER FORSCHUNG
IM GESUNDHEITSEKTOR VON
LAMAS UND ALPAKAS e.V.



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Stress in alpacas: physiological and behavioral responses during the shearing procedure

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Alpacas are primarily raised for fiber production, which involves regular shearing. The shearing process induces stress caused by social isolation, handling, restraint and shearing itself. Stress can be measured through physiological and behavioral parameters. Therefore, the aim of this experiment was to evaluate the stress reaction of alpacas by assessing core and peripheral body temperature as well as stress-indicating behaviors (e.g., vocalization, defense behavior). For this purpose, 42 female alpacas were either subjected to a ‘Shear’ (handled and shorn, n=32) or ‘Sham’ (handled but not shorn, n=10) treatment. To assess changes in the peripheral body temperature, infrared images were taken of the eyes (right and left) and nose (right nostril, left nostril, flew). Additionally, rectal temperature was measured to study how changes in core and peripheral temperature cohere. In both groups, temperatures were taken at five different measurement time points: before (‘Pre’), during (‘Start’, ‘Mid’, ‘End’) and after shearing/sham-shearing (‘Post’). To capture stress-indicating behaviors during shearing/sham-shearing, videos were recorded and analyzed for the different phases. Large individual differences were found in the temperature patterns. Mixed effects models revealed a significant increase in right eye temperature followed by a decrease in both groups ($p_{\text{time point}}=0.018$). Nostril and flew temperature consistently decreased as a first reaction to shearing/sham-shearing ($p_{\text{time point}}<0.07$). Rectal temperature stayed rather stable over the whole process, but it was higher in the ‘Shear’ (LSM=38.0°C) compared to the ‘Sham’ group (37.8°C, $p_{\text{group}}=0.04$). Frequency of screams ($p_{\text{group*phase}}<0.001$), time spent screaming ($p_{\text{group*phase}}=0.003$) and defense behaviors ($p_{\text{group*phase}}=0.007$) first increased in the ‘Shear’ group and decreased after the middle of shearing, while the contrary was observed in the ‘Sham’ group with more stress-indicating behaviors before and after sham-shearing and less during the middle part. Rectal and peripheral temperature correlated only weakly and associations between temperature changes of the right nostril and flew and scream frequency were also weak, indicating a slight increase in temperature with more screams. In sum, it can be assumed that the shearing/sham-shearing process (capture, handling, restraint) induces stress which is reflected in the overall frequency of stress-indicating behaviors. Core body temperature and peripheral temperature react differently in the course of shearing/sham-shearing and do not correlate well. The unclear pattern of physiological responses indicates that using core or peripheral body temperatures as a single measure of stress may not reveal valid conclusions. An important question for future studies should be how to reduce stress for alpacas during handling and shearing.