

Table 3 Comparison of specific behavioural responses (increase or no change) of goat kids and calves *during* cautery disbudding. The group that is compared to cautery disbudding and the observation duration of each study is also presented. Note: when the cautery disbudded animals are treated (eg with lidocaine), this is denoted by a superscript located in the comparison group column and is described in the footnote.

Species	Struggle	Vocalise	Leg movement	Tail shake	Head movement	Rear/ trip/fall	Comparison group	Restraint method	Reference
Goat kids		+					Simulated disbudding	NA	Greenwood & Shutt (1990)
	+	+					Simulated disbudding	Manually held and head restrained	Alvarez <i>et al</i> (2009)
		+	+				Simulated disbudding	Manually held and head restrained	Alvarez & Gutiérrez (2010)
			+	+			Disbudding + lidocaine + meloxicam	NA	Chandrabhas <i>et al</i> (2013)
	+	+				N	Simulated disbudding	Gently held on	Alvarez <i>et al</i> (2015)

			+				Simulated disbudding	lap of operator Head restrained and legs loosely held	Nfor <i>et al</i> (2016)
	N	N		+	N		Simulated disbudding	Manually restrained against wall	Graf & Senn (1999)
						+	Simulated disbudding + lidocaine	NA	Grondahl- Nielsen <i>et al</i> (1999)
Calves	+*	N					Simulated disbudding	Head bail	Stewart <i>et al</i> (2008)
						+	Simulated disbudding + lidocaine ^a	Chute	Doherty <i>et al</i> (2007)
							Simulated disbudding +	Restrained lying down	Stilwell <i>et al</i> (2010)

			saline + lidocaine ^b		
+	+	N	Simulated disbudding ^c	Chute	Caray <i>et al</i> (2015)
+			Simulated disbudding	Calf crate	Bates <i>et al</i> (2019)

+: increased in response to disbudding, N: no change in response to cautery disbudding, blank: was not assessed, NA: not available. *

No differences in individual behaviours were observed, but behaviours were combined together to give a single measure of activity.

Cautery disbudded calves were administered ^asaline, ^bxylazine and saline and ^cketoprofen.