

Pre rigor Produced Fillets of Atlantic Cod (*Gadus morhua* L.) Show no Cold Shortening



Tone Friis Aune

Tone Friis Aune¹, Margrethe Esaiassen¹, Leif Akse¹, Elinor Ytterstad² and Ragnar L.Olsen³
tone.friis.aune@nofima.no

Introduction

Low storage temperature is recommended to achieve longer shelf-life for fresh meat and fish. However, rapid cooling to temperatures close to 0°C of *pre rigor* excised meat from warm-blooded animals or *pre rigor* cut fillets from warm water fish species results in extensive muscle contraction (“cold shortening”) and has adverse effects on quality.

Modern slaughtering of farmed fish makes industrial *pre rigor* filleting feasible. Such fillets show much less fillet gaping and are available to the consumers sooner than fillets produced *post rigor*. *Pre rigor* produced fillets normally have an extended sales period and the costs of storage and distribution may be reduced.

Aim

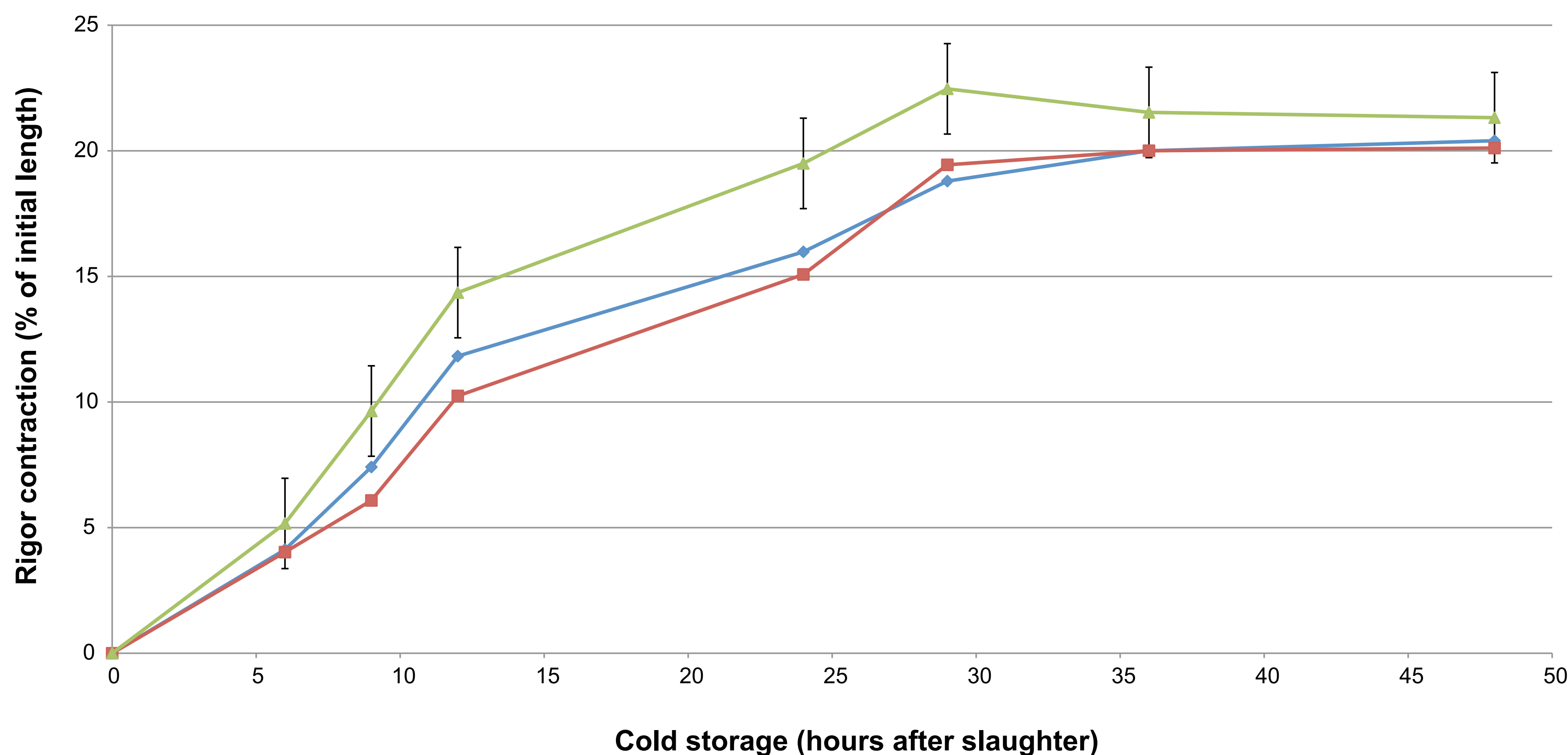
To investigate if cold shortening occurs in the cold water species Atlantic cod (*Gadus morhua* L.) and how relevant cold storage temperatures after slaughtering affect fillet contraction, weight loss and shelf-life.

Experimental set up

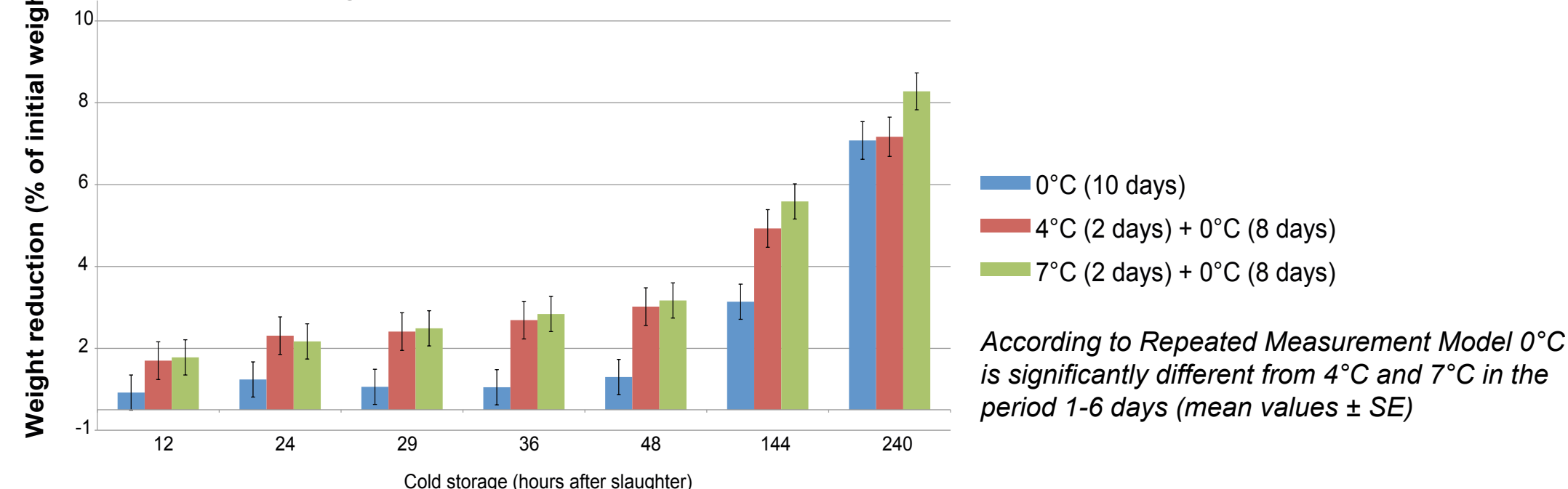
Groups of *pre rigor* produced fillets (n=18) were stored at 0, 4 or 7°C for 48 hours before subsequent storage at 0°C for 8 days for all fillets. Fillet contraction, weight reduction and total volatile nitrogen (TVN) were measured throughout the storage period.

Results

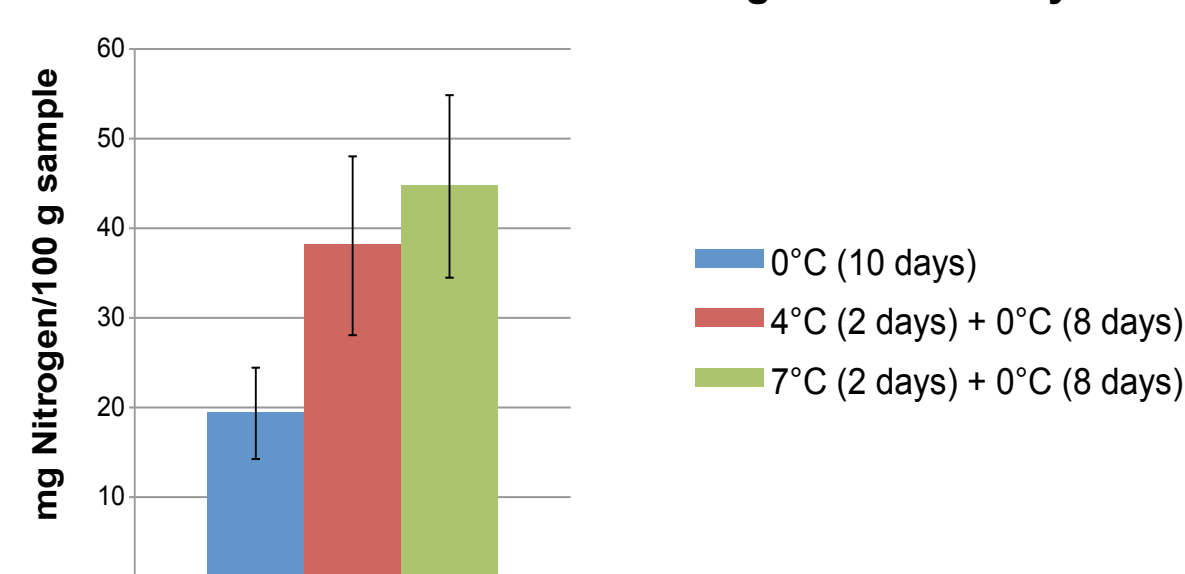
Fillet contraction in Atlantic cod



Weight reduction in fillets from Atlantic cod



Total Volatile Nitrogen after 10 days storage



Conclusions

- Cold shortening does not occur in *pre rigor* produced fillets of Atlantic cod.
- Weight loss was significantly lower in fillets stored at 0°C for 10 days than for fillets stored at 4 or 7°C during the first 2 days before 8 days at 0°C.
- Elevated cold storage temperature (4 or 7°C) during the first 48 hours post mortem clearly reduced the quality of the fillets after ten days of storage.

¹Nofima, Division Fisheries, Industry and Market, Tromsø, Norway

² University of Tromsø, Department of Mathematics and Statistics, Tromsø, Norway

³ University of Tromsø, Norwegian College of Fishery Science, Tromsø, Norway