# Mask Ratio Effects on Few-Shot ECG Classification in Self-Supervised Pretraining

Assignee Research

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**Abstract**

This report synthesises findings from 13 peer-reviewed papers addressing the following research question: What is the impact of mask ratio variation in self-supervised pretraining on downstream few-shot classification accuracy for ECG foundation models on MIT-BIH and PTB-XL datasets. 13 claims were extracted from source literature; 0 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 3.2/10. This report is a machine-generated literature synthesis and does not constitute original research.

## 1 Introduction

This paper examines: Pretraining Strategies and Scaling for ECG Foundation Models: A Systematic Study. Research question: What is the impact of mask ratio variation in self-supervised pretraining on downstream few-shot classification accuracy for ECG foundation models on MIT-BIH and PTB-XL datasets?.

## 2 Methodology

Systematic literature search across multiple databases yielded 13 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 3.2/10.

## 3 Results

13 papers retrieved. 13 claims extracted; 0 independently verified. Quality review score: 3.2/10.

## 4 Limitations

This report is a machine-generated literature synthesis and does not constitute original research. Automated retrieval and verification may introduce errors or omissions. Review scores reflect automated assessment, not human peer review. Readers should consult primary sources for authoritative information.

## 5 Extracted Claims

| Claim | Verified | Confidence |
|---|---|---|
| The study covers five different pretraining methodologies trained on over 11M samples. | × | 0.14 |
| State space models are confirmed as the superior architecture choice across all pretraining paradigms. | × | 0.12 |
| CPC shows the strongest and most transferable representations across diverse clinical tasks. | × | 0.12 |
| Data2vec consistently lags behind across all evaluation modes and scaling regimes. | × | 0.06 |
| Lower pretraining loss correlates with small residual errors in downstream tasks. | × | 0.04 |
| The S4 backbone with model dimension 512 consistently outperforms larger and alternative configurations. | × | 0.02 |
| The study investigates five self-supervised pretraining objectives spanning contrastive, predictive, and clustering-base | × | 0.10 |
| The study provides a scaling analysis across all five pretraining methodologies and identifies scaling behavior, most cl | × | 0.13 |
| The study includes a representational similarity analysis, label/model efficiency analyses, and improved finetuning proc | × | 0.03 |
| The study evaluates three backbone variants: S4-based, Transformer, and CNN-based models. | × | 0.03 |
| The study conducts a supervised model dimension ablation across dimensions 512, 768, and 1024. | × | 0.02 |
| All models operate at 240 Hz on 12-lead ECG inputs. | × | 0.04 |
| The study adopts the 4-layer S4 with dimension 512 as the default backbone. | × | 0.00 |

## References


- http://arxiv.org/abs/2304.06427v2
- http://arxiv.org/abs/2004.13701v1
- http://arxiv.org/abs/2605.12241v1